



Transportation Technical Report

SR 710 North Study

Los Angeles County, California

Prepared for



Los Angeles County
Metropolitan Transportation Authority

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Executive Summary

The California Department of Transportation (Caltrans), in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes transportation improvements to improve mobility and relieve congestion in the area between State Route (SR) 2 and Interstates 5, 10, 210 and 605 (I-5, I-10, I-210, and I-605, respectively) in east/northeast Los Angeles and the western San Gabriel Valley. The study area for the SR 710 North Study is approximately 100 square miles and generally bounded by I-210 on the north, I-605 on the east, I-10 on the south, and I-5 and SR 2 on the west.

A thorough traffic analysis was conducted to evaluate transportation relative to the project purpose and need, and to assess the impacts of five potential alternatives. This Transportation Technical Report provides the results of that analysis.

The five alternatives being considered in the SR 710 North Study are:

- No Build Alternative
- Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative
- Bus Rapid Transit (BRT) Alternative
- Light Rail Transit (LRT) Alternative
- Freeway Tunnel Alternative

Approach

A customized approach was developed to address the range of alternatives and multiple tools used. Both travel demand modeling and traffic operations modeling were performed. A comprehensive analysis was conducted for the Alternatives Analysis (AA) phase, using the then-current regional travel demand model (from the Southern California Association of Governments [SCAG] 2008 Regional Transportation Plan) as the basis. For the Environmental Impact Report/Environmental Impact Statement (EIR/EIS), a more detailed travel demand analysis was conducted using an updated, validated model (SCAG Version 6.1). The operations analysis was focused on level of service (LOS) analysis, keying on the details of mainline, ramp, and intersection traffic.

Travel demand modeling analysis focused primarily on AM and PM peak period and daily conditions. Traffic operations analysis focused primarily on AM and PM peak hour conditions. The year 2035 was selected for the horizon year analyses because that is the forecast year with available data from SCAG. The travel demand model analysis included the SCAG region, Los Angeles County, and the EIR/EIS study area. The traffic operations analysis used a focus area slightly larger than the study area for evaluating alternatives. The traffic operations analysis study area was selected to capture all freeway segments with potential changes in overall traffic for build alternatives. Traffic operations analysis was conducted on a defined set of freeway segments and intersections for evaluation. A total of 156 intersections were identified for the intersection analysis. For the EIR/EIS analysis, a fully integrated multimodal travel model was utilized.

Travel Forecasting Results

A total of 13 performance measures were used for travel forecasting. They are organized in three categories: system, highway, and transit measures. Within each category, four or five performance measures were used to assess the range of potential impacts. Opening year (2020/2025) and horizon year (2035) analyses were conducted. Only horizon year results are cited in this summary, but more details are provided in Section 4 of the main report.

In general, the forecasts show an increased mobility for all build alternatives compared to the No Build Alternative. There are clear benefits for highway system performance from the Freeway Tunnel Alternative, particularly because it removes traffic from the arterials. Both the single-bore and dual-bore design variations of the Freeway Tunnel Alternative show these benefits. The transit alternatives have virtually no effect on highway system performance on their own, although the TSM/TDM Alternatives does have some effects.

The improvements in the transit system provide benefits to the specific markets, but the size of the markets is not big enough to make a large change in the highway performance measures. Similarly, the highway alternatives do not generally affect the transit performance measures.

Table ES-1 provides data to support these conclusions; this table is an overview of the performance evaluation by alternative. The first two columns illustrate the daily shift in traffic from the arterials to the freeways, measured on a “screenline” (an imaginary east-west line) for year 2035 forecasts. In general, the Freeway Tunnel Alternative design variations (single bore and dual bore) reduce traffic congestion by shifting it from the surface streets (arterials) to the freeways. There is only a marginal change with the TSM/TDM, BRT, and LRT Alternatives. The net effect is a reduction in total vehicle miles traveled (VMT) on the arterials, and the overall delay (the next two columns of the table). These columns show the change in arterial VMT in the study area as compared to the No Build Alternative and total travel time (vehicle hours traveled [VHT]) in the study area for all facility types. (The shift in arterial VMT is highlighted because that is a focus of the project purpose and need, but data on overall VMT are presented in Section 4.) The last column in Table ES-1 is the number of new daily transit trips. This performance measure is strongly influenced by the new bus service in the TSM/TDM Alternative.

TABLE ES-1
Travel Forecasting Results Overview
SR 710 North Study, Los Angeles County, California

Alternative	Daily Screenline Volume		Change in Daily Arterial VMT in the Study Area Compared to No Build	Total Daily Travel Time (Hours)	New Daily Transit Trips ¹
	Arterial	Freeway			
2035 No Build	881,000	1,042,000	--	706,000	0
2035 TSM/TDM	890,000	1,039,000	0	702,000	11,250
2035 BRT	891,000	1,039,000	-10,000	702,000	13,500
2035 LRT	890,000	1,040,000	+40,000	706,000	15,350
2035 Freeway Tunnel (Single Bore)	837,000	1,117,000	-285,000	690,000	10,100
2035 Freeway Tunnel (Dual Bore)	795,000	1,183,000	-560,000	684,000	9,700

¹ New daily transit trips are the change in total daily linked transit trips in the SCAG region.

Additional details are provided in the following subsections for system, highway, and transit performance by alternative, and in Section 4 of the main report.

System Performance by Alternative

The VHT decreases with the Freeway Tunnel Alternative. The dual-bore variations account for a 2.5 percent decrease in peak period VHT in the study area. The single-bore variations have a 1.4 percent decrease in peak period study area VHT. The TSM/TDM and transit alternatives have virtually no effect on the study area VHT. The dual-bore variations of the Freeway Tunnel Alternative increase the total north-south person throughput. The increase in the person trip throughput for the single-bore variations is about half of the throughput of the dual-bore variations. The differences with the trucks/no trucks and express bus variations are marginal. The TSM/TDM and transit person trips throughput is largely unchanged.

All the build alternatives increase job accessibility between 20,000 and 65,000 jobs compared to the No Build Alternative. The single-bore variations of the Freeway Tunnel Alternative show the highest increase in job accessibility due to the increase in mobility and speed provided by the tolled tunnel. The dual-bore variations follow closely. The BRT Alternative increases job accessibility slightly more than the LRT Alternative.

Highway Performance by Alternative

The TSM and transit alternatives slightly increase the travel on arterials in the study areas while the Freeway Tunnel Alternative reduces the traffic on arterials and increases the traffic on freeways. The additional capacity provided by the single-bore and dual-bore variations of the Freeway Tunnel Alternative is on the freeway system. The dual-bore tunnel has the most north-south vehicular travel (increasing the regional mobility), while reducing

the volume on arterials (increasing accessibility) and increasing the volume on freeways. Similar to the system performance evaluation, the differences with the trucks/no trucks and express bus variations are marginal.

The overall daily VMT on arterials in the study area is reduced as compared to the No Build Alternative. The variations of the Freeway Tunnel Alternative reduce the total VMT on arterials (increasing accessibility) by moving those trips to freeways. The dual-bore variation has the largest effect on the study area arterial VMT, with the single-bore variations of the Freeway Tunnel Alternative providing a little more than half the effect as the dual-bore changes. The TSM/TDM and transit alternatives make almost no difference in the study area VMT.

The Freeway Tunnel Alternative reduces the number of long trips using arterials in the study area compared to the No Build Alternative. The Freeway Tunnel Alternative reduces the number of longer-distance trips from the arterials, increasing mobility for those trips that have moved to higher-capacity roads like freeways. The Freeway Tunnel Alternative also improves accessibility for local trips. The TSM/TDM and transit alternatives have little effect on the percentage of long-distance trips using arterials in the study area as compared to the No Build Alternative.

The Freeway Tunnel Alternative provides direct benefit to highway travel time savings by adding direct and indirect capacity for many trips. The single-bore variation has a higher percentage of travel time savings for trips in this corridor because the travel time savings do not factor in the cost of tolls, which in the single-bore variations function to keep the tunnel operating at a higher speed than the untolled and low-toll dual-bore variations. The transit alternatives have little effect on the highway travel time savings. The transit and TSM/TDM alternatives will have an effect on specific markets, but the travel time savings of those markets are small compared to the number of auto trips in the corridor.

Transit Performance by Alternative

All alternatives increase daily regional transit trips. The TSM/TDM improvements account for almost all the transit trip increases in the Freeway Tunnel Alternative, while the BRT and LRT Alternatives show additional growth in linked regional transit trips. None of the alternatives drastically alter the study area mode share. Many of the transit users on the BRT and LRT Alternatives come from other transit modes. The BRT and LRT Alternatives have slightly higher study area mode shares.

The BRT and LRT Alternatives have the largest effect on person trips. The changes in transit throughput for the Freeway Tunnel Alternative is largely based on the TSM/TDM improvements. The transit accessibility remains identical to the No Build Alternative for all alternatives except the transit alternatives. The BRT Alternative increases accessibility by less than 0.1 percent; the LRT Alternative increases the accessibility by approximately 0.1 percent. This measure shows that a majority of the study area (more than 80 percent) has access to high-frequency transit service.

The forecasts show an increased mobility for all alternatives over the No Build Alternative. The daily person trips crossing the east-west screenline increase for all build alternatives in both the opening and horizon years as is expected when transit and/or highway capacity is added to the transportation system.

The transit alternatives have virtually no effect on highway system performance. The improvements in the transit system provide benefits to the specific markets, but the size of the markets is not big enough to make a large change in the highway performance measures. Similarly, the highway alternatives do not generally affect the transit performance measures.

Traffic Operations Results

Detailed operations analysis was conducted using the methods of the industry-standard *Highway Capacity Manual* (HCM). The HCM procedures were applied to approximately 600 directional freeway segments and 156 intersections in the study area for the AM and PM peaks. Evaluations were conducted by comparing the LOS on the freeway and intersections between the build alternatives and the No Build Alternative.

Tables ES-2 and ES-3 provide summaries of the LOS evaluations for the intersections and freeway system. Each table includes the number of intersections or freeway segments where the LOS has a substantive change.

The count of intersections and freeway segments where operations get better (that is, where the LOS is no longer E or F) is shown in green. The count where operations get worse (to LOS E or F) is shown in red.

As noted above in the section on Travel Forecasting Results, the build alternatives shift arterial traffic. The Freeway Tunnel Alternative variations result in a marked shift in traffic from the arterials to the freeway. The TSM/TDM, BRT, and LRT Alternatives have a mixed effect; the increase in transit service results in some reduction in arterial traffic, but the intersection improvements drive traffic back to the freeway. Table ES-2 illustrates how the overall intersection LOS will improve with the two design variations of the Freeway Tunnel Alternative, as compared to the No Build Alternative. For the other build alternatives, the results are mixed. Additional details are provided in Section 5.4.2 of the main report.

TABLE ES-2
Intersection LOS Comparison to No Build Alternative (Combined 2035 AM and PM Peak)
SR 710 North Study, Los Angeles County, California

Alternative	Remains LOS E or F	Becomes LOS E or F	No Longer LOS E or F
TSM/TDM	28	17	12
BRT	27	13	13
LRT	29	11	19
Freeway Tunnel (Single Bore)	26	4	18
Freeway Tunnel (Dual Bore)	20	8	24

The effect of the shift in traffic from the arterials to the freeways, as compared to the No Build Alternative, is captured in Table ES-3. Most of the negative effects in the first three lines (TSM/TDM, BRT, and LRT) are due to the TSM/TDM improvements changing interchange traffic patterns without adding freeway capacity. While the freeway traffic volumes will increase with the Freeway Tunnel Alternative variations, there is little net overall change in LOS. In other words, the alternatives can accommodate the increased traffic (primarily on the connections to the SR 710 tunnel) while still providing surface street benefits. Additional details are provided in Section 5.4.1 of the main report.

TABLE ES-3
Freeway LOS Comparison to No Build Alternative (Combined 2035 AM and PM Peak)
SR 710 North Study, Los Angeles County, California

Alternative	Remains LOS E or F	Becomes LOS E or F	No Longer LOS E or F
TSM/TDM	376	19	4
BRT	373	16	7
LRT	369	28	4
Freeway Tunnel (Single Bore)	362	21	13
Freeway Tunnel (Dual Bore)	340	38	33

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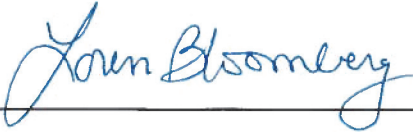
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Signature Page

The following individuals have participated in the preparation of the *SR 710 North Study, Transportation Technical Report*, or have completed quality review, or both.

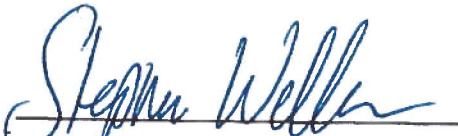
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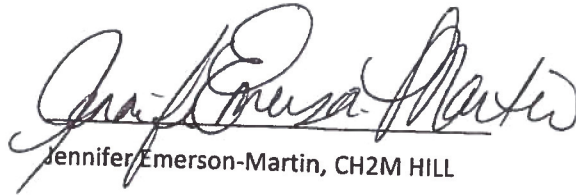
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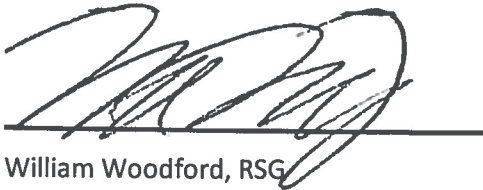


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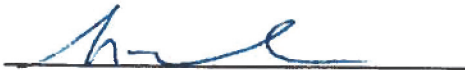
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Acronyms and Abbreviations

AA	Alternatives Analysis
ADA	Americans with Disabilities Act
ADT	average daily traffic
ATM	Active Traffic Management
BRT	Bus Rapid Transit
Cal State LA	California State University, Los Angeles
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMS	changeable message signs
E	east
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ELAC	East Los Angeles College
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
HDT	Heavy Duty Truck
HOV	high-occupancy vehicle
I	Interstate
IEN	information exchange network
ITS	Intelligent Transportation Systems
LOS	level of service
LRT	Light Rail Transit
MDL	maximum disturbance limit
Metro	Los Angeles County Metropolitan Transportation Authority
mph	miles per hour
MSA	Metropolitan Statistical Area
N	north
NEPA	National Environmental Policy Act
O-D	origin-destination
O&M	operations and maintenance
pc/mi/ln	passenger car per mile per lane
R ²	coefficient of determination

RMSE	root mean square error
ROW	right-of-way
RTP	Regional Transportation Plan
S	south
SCAG	Southern California Association of Governments
SR	State Route
TAP	Transit Access Pass
TDM	Transportation Demand Management
TMT	truck miles traveled
TRB	Transportation Research Board
TSM	Transportation System Management
TSSP	Traffic Signal Synchronization Program
US	United States Route
V/C	volume-to-capacity
VHT	vehicle hours traveled
VMT	vehicle miles traveled
W	west

Project Description

1.1 Introduction

The California Department of Transportation (Caltrans), in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes transportation improvements to improve mobility and relieve congestion in the area between State Route (SR) 2 and Interstates 5, 10, 210 and 605 (I-5, I-10, I-210, and I-605, respectively) in east/northeast Los Angeles and the western San Gabriel Valley. The study area for the SR 710 North Study, as shown in Figure 1-1, is approximately 100 square miles and generally bounded by I-210 on the north, I-605 on the east, I-10 on the south, and I-5 and SR 2 on the west. Caltrans is the Lead Agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

1.2 Purpose and Need

1.2.1 Purpose of the Project

Due to the lack of continuous north-south transportation facilities in the study area, there is congestion on freeways, cut-through traffic that affects local streets, and low-frequency transit operations in the study area. Therefore, the following project purpose has been established.

The purpose of the proposed action is to effectively and efficiently accommodate regional and local north-south travel demands in the study area of the western San Gabriel Valley and east/northeast Los Angeles, including the following considerations:

- Improve efficiency of the existing regional freeway and transit networks.
- Reduce congestion on local arterials adversely affected due to accommodating regional traffic volumes.
- Minimize environmental impacts related to mobile sources.

1.2.2 Need for the Project

The study area is centrally located within the extended urbanized area of Southern California. With few exceptions, the area from Santa Clarita in the north to San Clemente in the south (a distance of approximately 90 miles) is continuously urbanized. Physical features such as the San Gabriel Mountains and Angeles National Forest in the north, and the Puente Hills and Cleveland National Forest in the south, have concentrated urban activity between the Pacific Ocean and these physical constraints. This urbanized area functions as a single social and economic region that is identified by the Census Bureau as the Los Angeles-Long Beach-Santa Ana Metropolitan Statistical Area (MSA).

There are seven major east-west freeway routes:

- SR 118
- United States Route 101 (US-101)/SR 134/I-210
- I-10
- SR 60
- I-105
- SR 91
- SR 22

There are seven major north-south freeway routes:

- I-405
- US-101/SR 170
- I-5
- I-110/SR 110
- I-710/SR 710
- I-605
- SR 57

All of these major routes are located in the central portion of the Los Angeles-Long Beach-Santa Ana MSA. Of the seven north-south routes, four are located partially within the study area (I-5, I-110/SR 110, I-710/SR 710, and I-605), two of which (I-110/SR 110 and I-710/SR 710) terminate within the study area without connecting to another freeway. As a result, a substantial amount of north-south regional travel demand is concentrated on a few freeways, or diverted to local streets within the study area. This effect is exacerbated by the overall southwest-to-northeast orientation of I-605, which makes it an unappealing route for traffic between the southern part of the region and the urbanized areas to the northwest in the San Fernando Valley, the Santa Clarita Valley, and the Arroyo-Verdugo region.

The lack of continuous north-south transportation facilities in the study area has the following consequences, which have been identified as the elements of need for the project:

- Degradation of the overall efficiency of the larger regional transportation system
- Congestion on freeways in the study area
- Congestion on the local streets in the study area
- Poor transit operations within the study area

1.3 Alternatives

The proposed alternatives include:

- No Build Alternative
- Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative
- Bus Rapid Transit (BRT) Alternative
- Light Rail Transit (LRT) Alternative
- Freeway Tunnel Alternative

These alternatives are each discussed below.

1.3.1 No Build Alternative

The No Build Alternative includes projects/planned improvements through 2035 that are contained in the Federal Transportation Improvement Program, as listed in the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP)/Sustainable Communities Strategy Measure R, and the funded portion of Metro's 2009 Long-Range Transportation Plan. The No Build Alternative does not include any planned improvements to the SR 710 Corridor. Figure 1-2 illustrates the projects in the No Build Alternative.

1.3.2 Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative

The TSM/TDM Alternative consists of strategies and improvements to increase efficiency and capacity for all modes in the transportation system with lower capital cost investments and/or lower potential impacts. The TSM/TDM Alternative is designed to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. Components of the TSM/TDM Alternative are shown in Figure 1-3.

1.3.2.1 Transportation System Management

TSM strategies increase the efficiency of existing facilities (that is, TSM strategies are actions that increase the number of vehicle trips that a facility can carry without increasing the number of through lanes). TSM strategies include Intelligent Transportation Systems (ITS), local street and intersection improvements, and Active Traffic Management (ATM):

- **ITS Improvements:** ITS improvements include traffic signal upgrades, synchronization and transit prioritization, arterial changeable message signs (CMS), and arterial video and speed data collection systems. The TSM/TDM Alternative includes signal optimization on corridors with signal coordination hardware already installed by Metro's Traffic Signal Synchronization Program (TSSP). These corridors include Del Mar Avenue, Rosemead Boulevard, Temple City Boulevard, Santa Anita Avenue, Fair Oaks Avenue, Fremont Avenue, and Peck Road. The only remaining major north-south corridor in the San Gabriel Valley in which TSSP has not been implemented is Garfield Avenue; therefore, TSSP on this corridor is included in the TSM/TDM Alternative. The locations are shown in Table 1-1. The following provides a further explanation of the ITS elements listed above:
 - Traffic signal upgrades include turn arrows, vehicle and/or bicycle detection, pedestrian countdown timers, incorporation into regional management traffic center for real-time monitoring of traffic, and updating of signal timing.
 - Synchronization is accomplished through signal coordination to optimize travel times and reduce delay.
 - Transit signal prioritization includes adjusting signal times for transit vehicles to optimize travel times for public transit riders.
 - Arterial CMS are used to alert travelers about unusual road conditions, special event traffic, accident detours, and other incidents.
 - Video and speed data collection includes cameras and other vehicle detection systems that are connected to a central monitoring location, allowing for faster detection and response to traffic incidents and other unusual traffic conditions.
- **Local Street and Intersection Improvements:** The local street and intersection improvements are within the Cities of Los Angeles, Pasadena, South Pasadena, Alhambra, San Gabriel, Rosemead, and San Marino. Table 1-2 outlines the location of the proposed improvements to local streets, intersections, and freeway ramps as well as two new local roadways.
- **Active Traffic Management:** ATM technology and strategies are also included in the TSM/TDM Alternative. The major elements of ATM are arterial speed data collection and arterial CMS. Data on arterial speeds would be collected and distributed through Los Angeles County's Information Exchange Network (IEN). Many technologies are available for speed data collection, or the data could be purchased from a third-party provider. Travel time data collected through this effort could be provided to navigation system providers for distribution to the traveling public. In addition, arterial CMS or "trailblazer" message signs would be installed at key locations to make travel time and other traffic data available to the public.

1.3.2.2 Transportation Demand Management

TDM strategies focus on regional means of reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. TDM strategies facilitate higher vehicle occupancy or reduce traffic congestion by expanding the traveler's transportation options in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. The TDM strategies include reducing the demand for travel during peak periods, reducing the use of motor vehicles, shifting the use of motor vehicles to uncongested times of the day, encouraging rideshare and transit use, eliminating trips (that is, telecommuting), and improved transportation options. The TDM strategies include expanded bus service, bus service improvements, and bicycle improvements.

- **Expanded Bus Service and Bus Service Improvements:** Transit service improvements included in the TSM/TDM Alternative are summarized in Tables 1-3 and 1-4 and illustrated in Figure 1-3. The transit service improvements enhance bus headways between 10 and 30 minutes during the peak hour and between 15 and 60 minutes during the off-peak period. Bus headways are the amount of time between consecutive bus trips (traveling in the same direction) on the bus route. Some of the bus service enhancements almost double existing bus service.
- **Bicycle Facility Improvements:** The bicycle facility improvements include on-street Class III bicycle facilities that support access to transit facilities through the study area and expansion of bicycle parking facilities at existing Metro Gold Line stations. Proposed bicycle facility improvements are outlined in Table 1-4.

TABLE 1-1
TSM/TDM Alternative Elements
SR 710 North Study, Los Angeles County, California

ID No.	Description	Location
ITS Improvements		
ITS-1	Transit Signal Priority	Rosemead Boulevard (from Foothill Boulevard to Del Amo Boulevard)
ITS-2	Install Video Detection System on SR 110	SR 110 north of US-101
ITS-3	Install Video Detection System at Intersections	At key locations in study area
ITS-4	Arterial Speed Data Collection	On key north/south arterials
ITS-5	Install Arterial CMS	At key locations in study area
ITS-6	Traffic Signal Synchronization on Garfield Avenue	Huntington Drive to I-10
ITS-7	Signal optimization on Del Mar Avenue	Huntington Drive to I-10
ITS-8	Signal optimization on Rosemead Boulevard	Foothill Boulevard to I-10
ITS-9	Signal optimization on Temple City Boulevard	Duarte Road to I-10
ITS-10	Signal optimization on Santa Anita Avenue	Foothill Boulevard to I-10
ITS-11	Signal optimization on Peck Road	Live Oak Avenue to I-10
ITS-12	Signal optimization on Fremont Avenue	Huntington Drive to I-10

1.3.3 Bus Rapid Transit (BRT) Alternative

The BRT Alternative would provide high-speed, high-frequency bus service through a combination of new and dedicated bus lanes, and mixed-flow traffic lanes to key destinations between East Los Angeles and Pasadena. The proposed route length is approximately 12 miles. Figure 1-4 illustrates the BRT Alternative.

The BRT Alternative includes the BRT trunk line arterial street and station improvements, frequent bus service, new bus feeder services, and enhanced connecting bus services. BRT includes bus enhancements identified in the TSM/TDM Alternative, except for improvements to Metro Route 762.

Buses are expected to operate every 10 minutes during peak hours and every 20 minutes during off-peak hours. The BRT service would generally replace, within the study area, the existing Metro Route 762 service. The 12-mile route would begin at Atlantic Boulevard and Whittier Boulevard to the south, follow Atlantic Boulevard, Huntington Drive, Fair Oaks Avenue, Del Mar Boulevard, and end with a terminal loop in Pasadena to the north. Buses operating in the corridor would be given transit signal priority from a baseline transit signal priority project that will be implemented separately by Metro.

TABLE 1-2

Local Street and Intersection Improvements of the TSM/TDM Alternative*SR 710 North Study, Los Angeles County, California*

ID No.	Description	Location
Local Street Improvements		
L-1	Figueroa Street from SR 134 to Colorado Boulevard	City of Los Angeles (Eagle Rock)
L-2a	Fremont Avenue from Huntington Drive to Alhambra Road	City of South Pasadena
L-2c	Fremont Avenue from Mission Road to Valley Boulevard	City of Alhambra
L-3	Atlantic Boulevard from Glendon Way to I-10	City of Alhambra
L-4	Garfield Avenue from Valley Boulevard to Glendon Way	City of Alhambra
L-5	Rosemead Boulevard from Lower Azusa Road to Marshall Street	City of Rosemead
L-8	Fair Oaks Avenue from Grevelia Street to Monterey Road	City of South Pasadena
Intersection Improvements		
I-1	West Broadway/Colorado Boulevard	City of Los Angeles (Eagle Rock)
I-2	Eagle Rock Boulevard/York Boulevard	City of Los Angeles (Eagle Rock)
I-3	Eastern Avenue/Huntington Drive	City of Los Angeles (El Sereno)
I-4	SR 710 SB On-Ramp/Valley Boulevard	City of Alhambra
I-5	SR 710 NB Off-Ramp/Valley Boulevard	City of Alhambra
I-7	Fair Oaks Avenue/Mission Street	City of South Pasadena
I-8	Fair Oaks Avenue/Monterey Road	City of South Pasadena
I-9	Fremont Street/Monterey Road	City of South Pasadena
I-10	Huntington Drive/Fair Oaks Avenue	City of South Pasadena
I-11	Fremont Avenue/Huntington Drive	City of South Pasadena
I-12	Fremont Avenue/Valley Boulevard	City of Alhambra
I-13	Huntington Drive/Garfield Avenue	Cities of Alhambra/South Pasadena/San Marino
I-14	Huntington Drive/Atlantic Boulevard	Cities of Alhambra/South Pasadena/San Marino
I-15	Atlantic Boulevard/Garfield Avenue	Cities of Alhambra/South Pasadena/San Marino
I-16	Garfield Avenue/Mission Road	City of Alhambra
I-17	Garfield Avenue/Valley Boulevard	City of Alhambra
I-18	San Gabriel Boulevard/Huntington Drive	City of San Marino/Unincorporated Los Angeles County (East Pasadena/East San Gabriel)
I-19	Del Mar Avenue/Mission Road	City of San Gabriel
I-20	Rosemead Boulevard/Mission Road	City of Rosemead
I-22	San Gabriel Boulevard/Marshall Street	City of San Gabriel
I-24	Huntington Drive/Oak Knoll Avenue	City of San Marino
I-25	Huntington Drive/San Marino Avenue	City of San Marino
I-34	Fremont Avenue/Commonwealth Avenue	City of Alhambra
I-35	Fremont Avenue/Poplar Boulevard	City of Alhambra
I-43	Del Mar Avenue/Valley Boulevard	City of San Gabriel
I-44	Hellman Avenue/Fremont Avenue	City of Alhambra
I-45	Eagle Rock Boulevard/Colorado Boulevard	City of Los Angeles (Eagle Rock)
Other Road Improvements		
T-1	Valley Boulevard to Mission Road Connector Road	Cities of Alhambra/Los Angeles (El Sereno)
T-2	SR 110/Fair Oaks Avenue Hook Ramps	Cities of South Pasadena/Pasadena
T-3	St. John Avenue Extension between Del Mar Boulevard and California Boulevard	City of Pasadena

NB – northbound

SB – southbound

TABLE 1-3
Transit Refinements of the TSM/TDM Alternative
SR 710 North Study, Los Angeles County, California

Bus Route	Operator	Route Type	Route Description	Existing Headways		Enhanced Headways	
				Peak	Off-Peak	Peak	Off-Peak
70	Metro	Local	From Downtown Los Angeles to El Monte via Garvey Avenue	10-12	15	10	15
770	Metro	Rapid	From Downtown Los Angeles to El Monte via Garvey/Cesar Chavez Avenue	10-13	15	10	15
76	Metro	Local	From Downtown Los Angeles to El Monte via Valley Boulevard	12-15	16	10	15
78	Metro	Local	From Downtown Los Angeles to Irwindale via Las Tunas Drive	10-20	16-40	10	15
378	Metro	Limited	From Downtown Los Angeles to Irwindale via Las Tunas Drive	18-23	-	20	30
79	Metro	Local	From Downtown Los Angeles to Santa Anita via Huntington Drive	20-30	40-45	15	30
180	Metro	Local	From Hollywood to Altadena via Los Feliz/ Colorado Boulevard	30	30-32	15	30
181	Metro	Local	From Hollywood to Pasadena via Los Feliz/ Colorado Boulevard	30	30-32	15	30
256	Metro	Local	From Commerce to Altadena via Hill Avenue/ Avenue 64/Eastern Avenue	45	45	30	40
258	Metro	Local	From Paramount to Alhambra via Fremont Avenue/ Eastern Avenue	48	45-55	20	30
260	Metro	Local	From Compton to Altadena via Fair Oaks Avenue/ Atlantic Boulevard	16-20	24-60	15	30
762 ¹	Metro	Rapid	From Compton to Altadena via Atlantic Boulevard	25	30-60	15	30
266	Metro	Local	From Lakewood to Pasadena via Rosemead/ Lakewood Boulevard	30-35	40-45	15	30
267	Metro	Local	From El Monte to Pasadena via Temple City/ Del Mar Boulevard	30	30	15	30
485	Metro	Express	From Union Station to Altadena via Fremont/ Lake Avenue	40	60	30	60
487	Metro	Express	From Westlake to El Monte via Santa Anita Avenue/ Sierra Madre Boulevard/ San Gabriel Boulevard	18-30	45	15	30
489	Metro	Express	From Westlake to East San Gabriel via Rosemead Boulevard	18-20	-	15	-
270	Metro	Local	From Norwalk to Monrovia via Workman Mill/ Peck Road	40-60	60	30	60
780	Metro	Rapid	From West Los Angeles to Pasadena via Fairfax Avenue/ Hollywood Boulevard/ Colorado Boulevard	10-15	22-25	10	20
187	Foothill	Local	From Pasadena to Montclair via Colorado Boulevard/ Huntington Drive/ Foothill Boulevard	20	20	15	15

¹ This route would not be included as part of the BRT Alternative because the BRT Alternative would replace this service.

Express – Express Bus

Foothill – Foothill Transit

Rapid – Bus Rapid Transit

TABLE 1-4
Active Transportation and Bus Enhancements of the TSM/TDM Alternative
SR 710 North Study, Los Angeles County, California

ID No.	Description	Location
Bus Service Improvements		
Bus-1	Additional bus service	See Table 1-3 and Figure 1-3
Bus-2	Bus stop enhancements	Along routes listed in Table 1-3
Bicycle Facility Improvements		
Bike-1	Rosemead Boulevard bike route (Class III)	Colorado Boulevard to Valley Boulevard (through Los Angeles County, Temple City, Rosemead)
Bike-2	Del Mar Avenue bike route (Class III)	Huntington Drive to Valley Boulevard (through San Marino, San Gabriel)
Bike-3	Huntington Drive bike route (Class III)	Mission Road to Santa Anita Avenue (through the City of Los Angeles, South Pasadena, San Marino, Alhambra, Los Angeles County, Arcadia)
Bike-4	Foothill Boulevard bike route (Class III)	In La Cañada Flintridge
Bike-5	Orange Grove bike route (Class III)	Walnut Street to Columbia Street (in Pasadena)
Bike-6	California Boulevard bike route (Class III)	Grand Avenue to Marengo Avenue (in Pasadena)
Bike-7	Add bike parking at transit stations	Metro Gold Line stations
Bike-8	Improve bicycle detection at existing intersections	Along bike routes in study area

Where feasible, buses would run in dedicated bus lanes adjacent to the curb, either in one direction or both directions, during peak periods. The new dedicated bus lanes would generally be created within the existing street rights-of-way (ROWs) through a variety of methods that include restriping the roadway, restricted on-street parking during peak periods, narrowing medians, planted parkways, or sidewalks. Buses would share existing lanes with other traffic in cases where there is not enough ROW. The exclusive lanes would be exclusive to buses and right-turning traffic during AM and PM peak hours only. At other times of day, the exclusive lanes would be available for on-street parking use.

A total of 17 BRT stations with amenities would be placed, on average, at approximately 0.8-mile intervals at major activity centers and cross streets. Typical station amenities would include new shelters, branding elements, seating, wind screens, leaning rails, variable message signs (next bus information), lighting, bus waiting signals, trash receptacles, and stop markers. Some of these stops will be combined with existing stops, while in some cases, new stops for BRT will be provided directly adjacent to existing local stops on the same side of the street. The BRT service would include 60-foot articulated buses with three doors, and would have the latest fare collection technology such as on-board smart card (Transit Access Pass [TAP] card) readers to reduce dwell times at stations. The BRT stops would be provided at the following 17 locations:

- Atlantic Boulevard at Whittier Boulevard
- Atlantic Boulevard between Pomona Boulevard and Beverly Boulevard
- Atlantic Boulevard at Cesar Chavez Avenue/Riggin Street
- Atlantic Boulevard at Garvey Avenue
- Atlantic Boulevard at Valley Boulevard
- Atlantic Boulevard at Main Street
- Huntington Drive at Garfield Road
- Huntington Drive at Marengo Avenue

- Fair Oaks Avenue at Mission Street
- Fair Oaks Avenue at Glenarm Street
- Fair Oaks Avenue at California Boulevard
- Fair Oaks Avenue at Del Mar Boulevard
- Del Mar Boulevard at Los Robles Avenue
- Del Mar Boulevard at Lake Avenue
- Del Mar Boulevard at Hill Avenue (single direction only)
- Colorado Boulevard at Hill Avenue (single direction only)
- Colorado Boulevard at Lake Avenue (single direction only)

Additionally, this alternative would include bus feeder routes that would connect additional destinations with the BRT mainline. Two bus feeder routes are proposed: one that would run along Colorado Boulevard, Rosemead Boulevard, and Valley Boulevard to the El Monte transit station; and another bus feeder route that would travel from Atlantic Boulevard near the Gold Line Station to the Metrolink stations in the City of Commerce and Montebello via Beverly Boulevard and Garfield Avenue. In addition, other existing bus services in the study area would be increased in frequency and/or span of service. The El Sol shuttle improvements are an existing bus service that would be increased in frequency. The headways on the El Sol shuttle “City Terrace/ East Los Angeles College (ELAC)” route that connect ELAC to the proposed Floral Station would be reduced from 60 minutes to 15 minutes.

The TSM/TDM Alternative improvements would also be constructed as part of the BRT Alternative, except as noted below. These improvements would provide the additional enhancements to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. Local Street Improvements L-8 (Fair Oaks Avenue from Grevelia Street to Monterey Road) and the reversible lane component of L-3 (Atlantic Boulevard from Glendon Way to I-10) would not be constructed with the BRT Alternative.

1.3.4 Light Rail Transit (LRT) Alternative

The LRT Alternative would include passenger rail operated along a dedicated guideway, similar to other Metro light rail lines. The LRT alignment is approximately 7.5 miles long, with 3 miles of aerial segments and 4.5 miles of bored tunnel segments. Figure 1-5 illustrates the LRT Alternative.

The LRT Alternative would begin at an aerial station on Mednik Avenue adjacent to the existing East Los Angeles Civic Center Station on the Metro Gold Line. The alignment would remain elevated as it travels north on Mednik Avenue, west on Floral Drive, north across Corporate Center Drive, and then along the west side of I-710, primarily in Caltrans ROW, to a station adjacent to the California State University, Los Angeles (Cal State LA). The alignment would descend into a tunnel south of Valley Boulevard and travel northeast to Fremont Avenue, north under Fremont Avenue, and easterly to Fair Oaks Avenue. The alignment would then cross under SR 110 and end at an underground station beneath Raymond Avenue adjacent to the existing Fillmore Station on the Metro Gold Line.

Two directional tunnels are proposed with tunnel diameters approximately 20 feet each, located approximately 60 feet below the ground surface. Other supporting tunnel systems include emergency evacuation cross passages for pedestrians, a ventilation system consisting of exhaust fans at each portal and an exhaust duct along the entire length of the tunnel, fire detection and suppression systems, communications and surveillance systems, and 24-hour monitoring, similar to the existing LRT system.

Trains would operate at speeds of up to 65 miles per hour (mph) approximately every 5 minutes during peak hours and every 10 minutes during off-peak hours.

Seven stations would be located along the LRT alignment at Mednik Avenue in East Los Angeles, Floral Drive in Monterey Park, Cal State LA, Fremont Avenue in Alhambra, Huntington Drive in South Pasadena, Mission Street in South Pasadena, and Fillmore Street in Pasadena. The Fremont Avenue Station, the Huntington Drive Station, the Mission Street Station, and the Fillmore Street Station would be underground stations. New park-and-ride facilities would be provided at all of the proposed stations except for the Mednik, Cal State LA, and Fillmore Stations.

A maintenance yard to clean, maintain, and store light rail vehicles would be located on both sides of Valley Boulevard at the terminus of SR 710. A track spur from the LRT mainline to the maintenance yard would cross above Valley Boulevard.

Two bus feeder services would be provided. One would travel from the Commerce Station on the Orange County Metrolink line and the Montebello Station on the Riverside Metrolink line to the Floral Station, via East Los Angeles College. The other would travel from the El Monte Bus Station to the Fillmore Station via Rosemead and Colorado Boulevards. In addition, other existing bus services in the study area would be increased in frequency and/or span of service.

As part of the LRT Alternative, the I-710 northbound off-ramp at Valley Boulevard would be modified.

The TSM/TDM Alternative improvements would also be constructed as part of the LRT Alternative. These improvements would provide the additional enhancements to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. The only component of the TSM/TDM Alternative improvements that would not be constructed with the LRT Alternative is Other Road Improvement T-1 (Valley Boulevard to Mission Road Connector Road).

1.3.5 Freeway Tunnel Alternative

The alignment for the Freeway Tunnel Alternative starts at the existing southern stub of SR 710 in Alhambra, just north of I-10, and connects to the existing northern stub of SR 710, south of the I-210/SR 134 interchange in Pasadena. The Freeway Tunnel Alternative would include the following tunnel support systems: emergency evacuation for pedestrians and vehicles, air scrubbers, a ventilation system consisting of exhaust fans at each portal, an exhaust duct along the entire length of the tunnel and jet fans within the traffic area of the tunnel, fire detection and suppression systems, communications and surveillance systems, and 24-hour monitoring. An operations and maintenance (O&M) building would be constructed at the northern and southern ends of the tunnel. There would be no operational restrictions for the tunnel, with the exception of vehicles carrying flammable or hazardous materials. As part of both design variations of the Freeway Tunnel Alternative, the I-710 northbound off-ramp and southbound on-ramp at Valley Boulevard would be modified.

The TSM/TDM Alternative improvements would also be constructed as part of the Freeway Tunnel Alternative, including either the dual-bore or single-bore design variations. These improvements would provide the additional enhancements to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. The only components of the TSM/TDM Alternative improvements that would not be constructed with the Freeway Tunnel Alternative are Other Road Improvements T-1 (Valley Boulevard to Mission Road Connector Road) and T-3 (St. John Avenue Extension between Del Mar Boulevard and California Avenue).

1.3.5.1 Design Variations

The Freeway Tunnel Alternative includes two design variations. These variations relate to the number of tunnels constructed. The dual-bore design variation includes two tunnels that independently convey northbound and southbound vehicles. The single-bore design variation includes one tunnel that carries both northbound and southbound vehicles. Figure 1-6 illustrates the dual-bore and single-bore tunnel design variations for the Freeway Tunnel Alternative. Each of these design variations is described below.

- Dual-Bore Tunnel:** The dual-bore tunnel design variation is approximately 6.3 miles long, with 4.2 miles of bored tunnel, 0.7 mile of cut-and-cover tunnel, and 1.4 miles of at-grade segments. The dual-bore tunnel design variation would consist of two side-by-side tunnels (the east tunnel would convey northbound traffic, and the west tunnel would convey southbound traffic). Each tunnel would have two levels with traffic traveling in the same direction. Each tunnel would consist of two lanes of traffic on each level, traveling in one direction, for a total of four lanes in each tunnel. The east tunnel would be constructed for northbound traffic, and the west tunnel would be constructed for southbound traffic. Each bored tunnel would have an outside diameter of approximately 58.5 feet and would be located approximately 120 to 250 feet below the ground surface. Vehicle cross passages would be provided throughout this tunnel variation that would connect one tunnel to

the other tunnel for use in an emergency situation. Figure 1-6 illustrates the dual-bore tunnel variation of the Freeway Tunnel Alternative.

Short segments of cut-and-cover tunnels would be located at the south and north termini to provide access via portals to the bored tunnels. The portal at the southern terminus would be located south of Valley Boulevard. The portal at the northern terminus would be located north of Del Mar Boulevard. No intermediate interchanges are planned for the tunnel.

- **Single-Bore Tunnel:** The single-bore tunnel design variation is also approximately 6.3 miles long, with 4.2 miles of bored tunnel, 0.7 mile of cut-and-cover tunnel, and 1.4 miles of at-grade segments. The single-bore tunnel design variation would consist of one tunnel with two levels. Each level would have two lanes of traffic traveling in one direction. The northbound traffic would traverse the upper level, and the southbound traffic would traverse the lower level. The single-bore tunnel would provide a total of four lanes. The single-bore tunnel would also have an outside diameter of approximately 58.5 feet and would be located approximately 120 to 250 feet below the ground surface. The single-bore tunnel would be in the same location as the northbound tunnel in the dual-bore tunnel design variation. Figure 1-7 illustrates the single-bore tunnel variation cross section of the Freeway Tunnel Alternative.

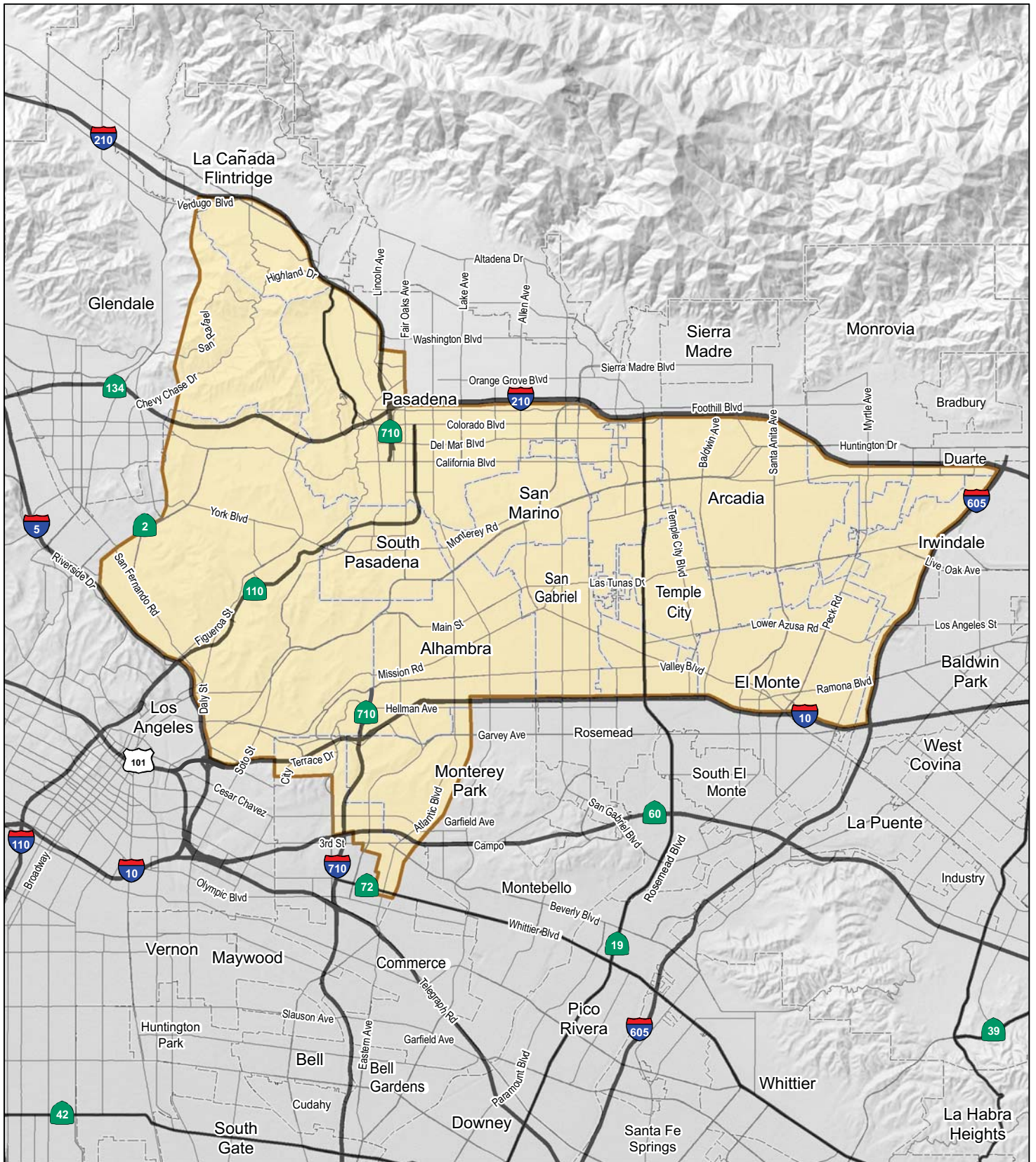
1.3.5.2 Operational Variations

There were three different parameters related to the operational variations of the Freeway Tunnel Alternative:

- **Tolling:** Tolls could be charged for vehicles using the tunnel, or it could be free for all drivers (a conventional freeway). It is anticipated that tolls would be collected through open-road tolling methods (i.e. transponders) and cash toll and toll booths would not be needed. Tolls could be collected at highway speeds without vehicles having to slow down to pay a toll.
- **Trucks:** Trucks could be prohibited or allowed.
- **Express Bus:** A dedicated Express Bus could be operated using the tunnel. The Express Bus route would start at the Commerce Station on the Orange County Metrolink line, and then serve the Montebello Station on the Riverside Metrolink line and East Los Angeles College before entering I-710 at Floral Drive. The bus would travel north to Pasadena via the proposed freeway tunnel, making a loop serving Pasadena City College, the California Institute of Technology, and downtown Pasadena before re-entering the freeway and making the reverse trip.

The following operational variations have been identified for the Freeway Tunnel Alternative:

- **Freeway Tunnel Alternative without Tolls:** The facility would operate as a conventional freeway with lanes open to all vehicles. Trucks would be allowed and there would be no Express Bus service. This operational variation would be considered for only the dual-bore tunnel design variation.
- **Freeway Tunnel Alternative with Trucks Excluded:** The facility would operate as a conventional freeway; however, trucks would be excluded from using the tunnel. There would be no Express Bus service. Signs would be provided along I-210, SR 134, I-710, and I-10 to provide advance notice of the truck restriction. This operational variation would be considered for the dual-bore tunnel only.
- **Freeway Tunnel Alternative with Tolls:** All vehicles, including trucks, using the tunnel would be tolled. There would be no Express Bus service. This operational variation would be considered for both the dual- and single-bore tunnels described above.
- **Freeway Tunnel Alternative with Trucks Excluded and with Tolls:** The facility would be tolled for all automobiles. There would be no Express Bus service. Trucks would be excluded from using the tunnel. Signs would be provided along I-210, SR 134, I-710, and I-10 to provide advance notice of the truck restriction. This operational variation would be considered for the single-bore tunnel only.
- **Freeway Tunnel Alternative with Toll and Express Bus:** The freeway tunnel would operate as a tolled facility and include an Express Bus component. The Express Bus would be allowed in any of the travel lanes in the tunnel; no bus-restricted lanes would be provided. Trucks would be permitted. This operational variation would be considered for the single-bore tunnel only.




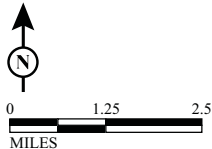
LEGEND
 SR 710 North Study Area

FIGURE 1-1



SOURCE: ESRI (2008); LSA (2013)
 I:\CHM1105\GVP&N\Project Location.cdr (10/27/14)

SR 710 North Study
Project Location
 07-LA-710 (SR 710)
 EA 187900
 EFIS 0700000191

SR 710 North – No Build Alternative 2035 Programmed Projects

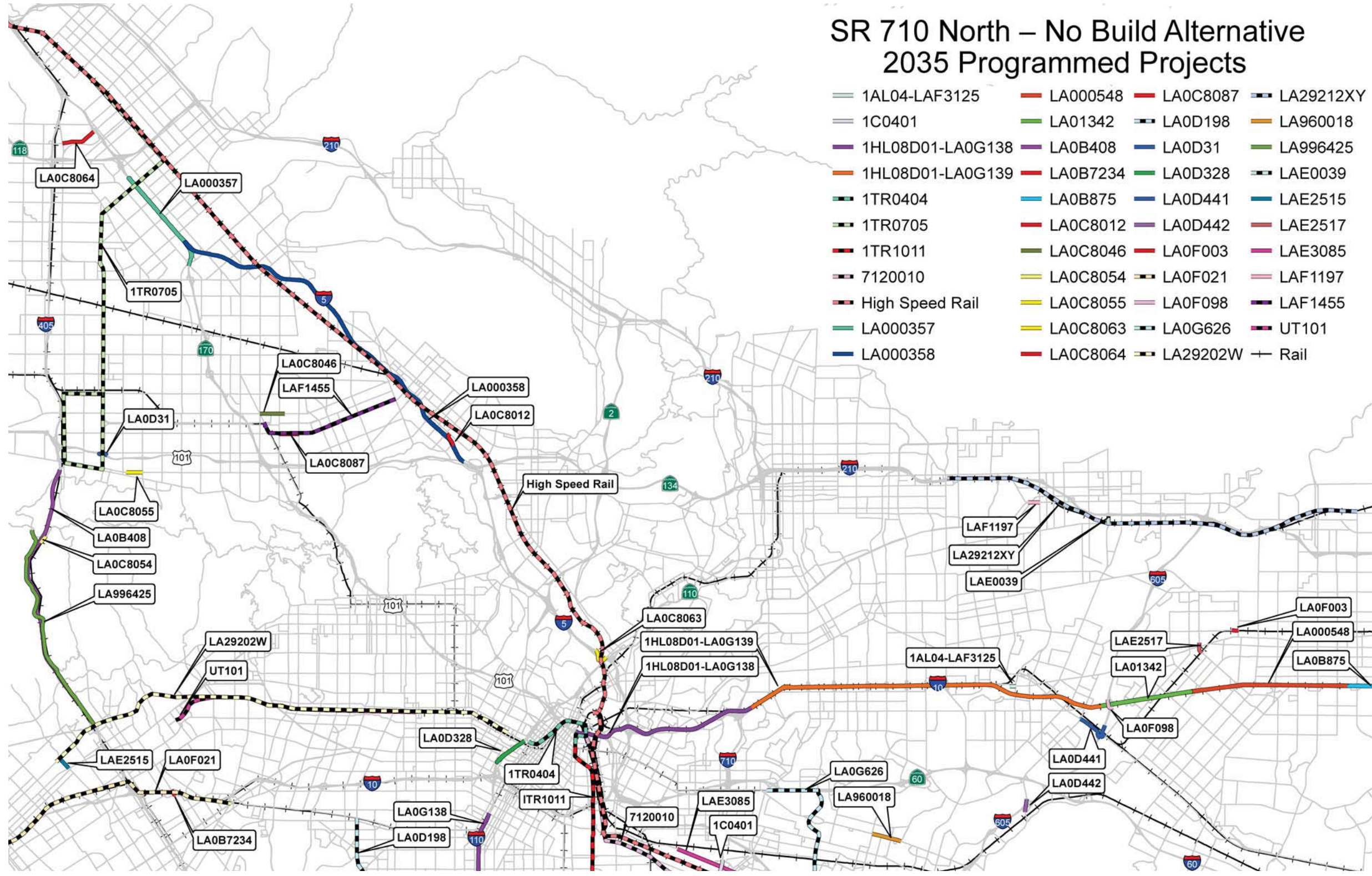


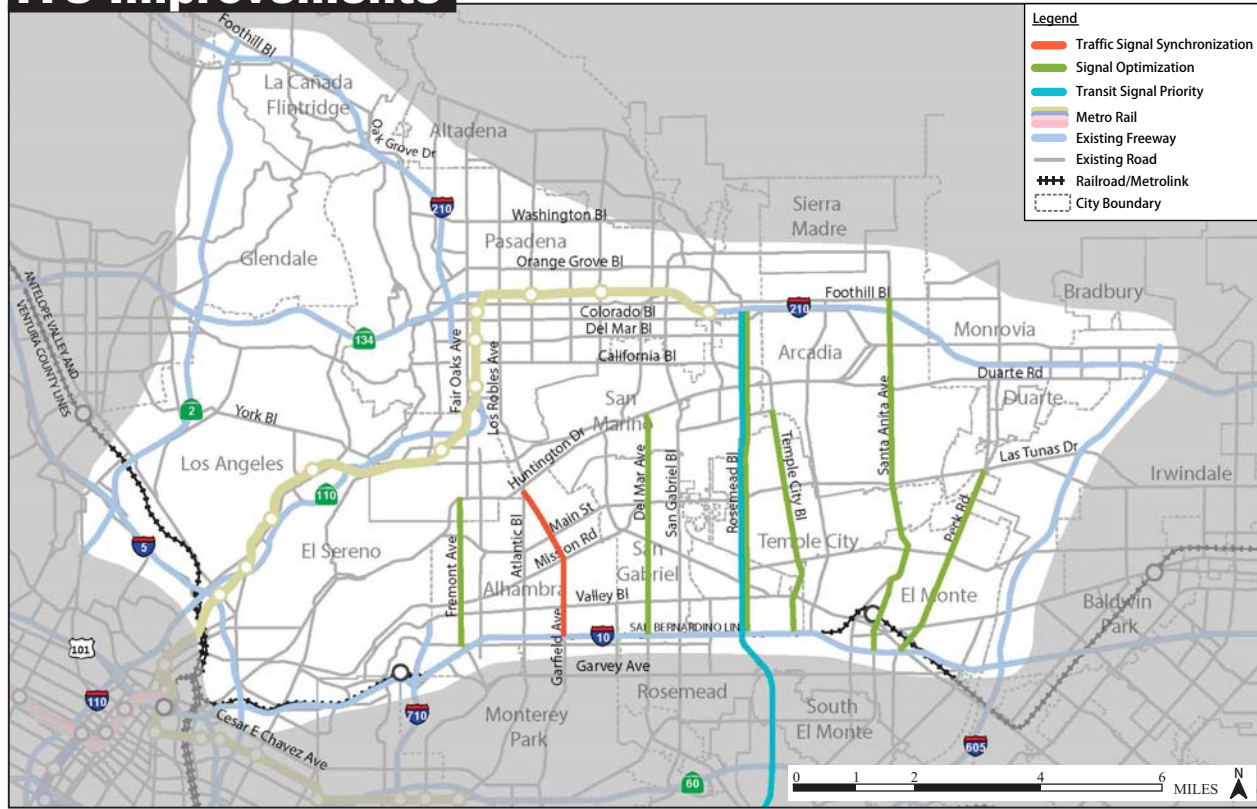
FIGURE I-2



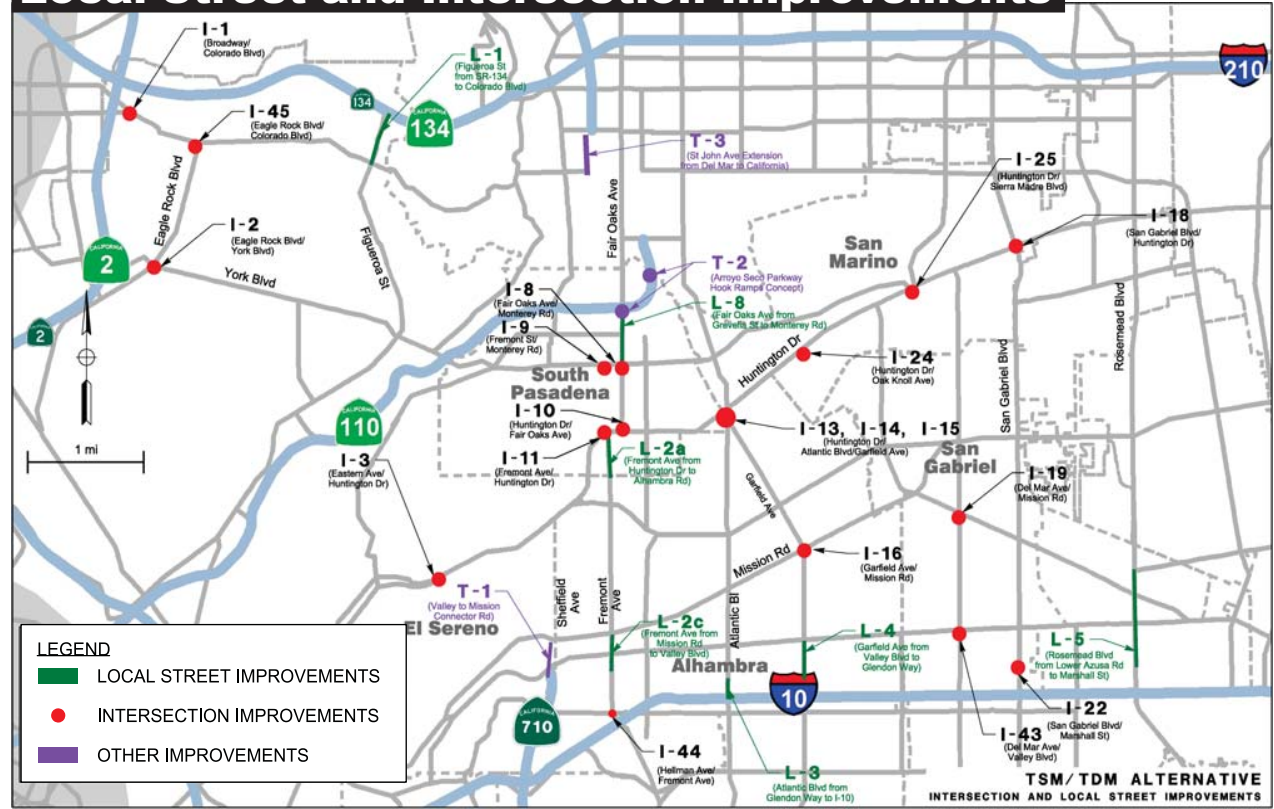
NOT TO SCALE
 SOURCE: CH2M HILL (2013)
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SR 710 North Study
 No Build Alternative
 07-LA-710 (SR 710)
 EA 187900
 EFIS 0700000191

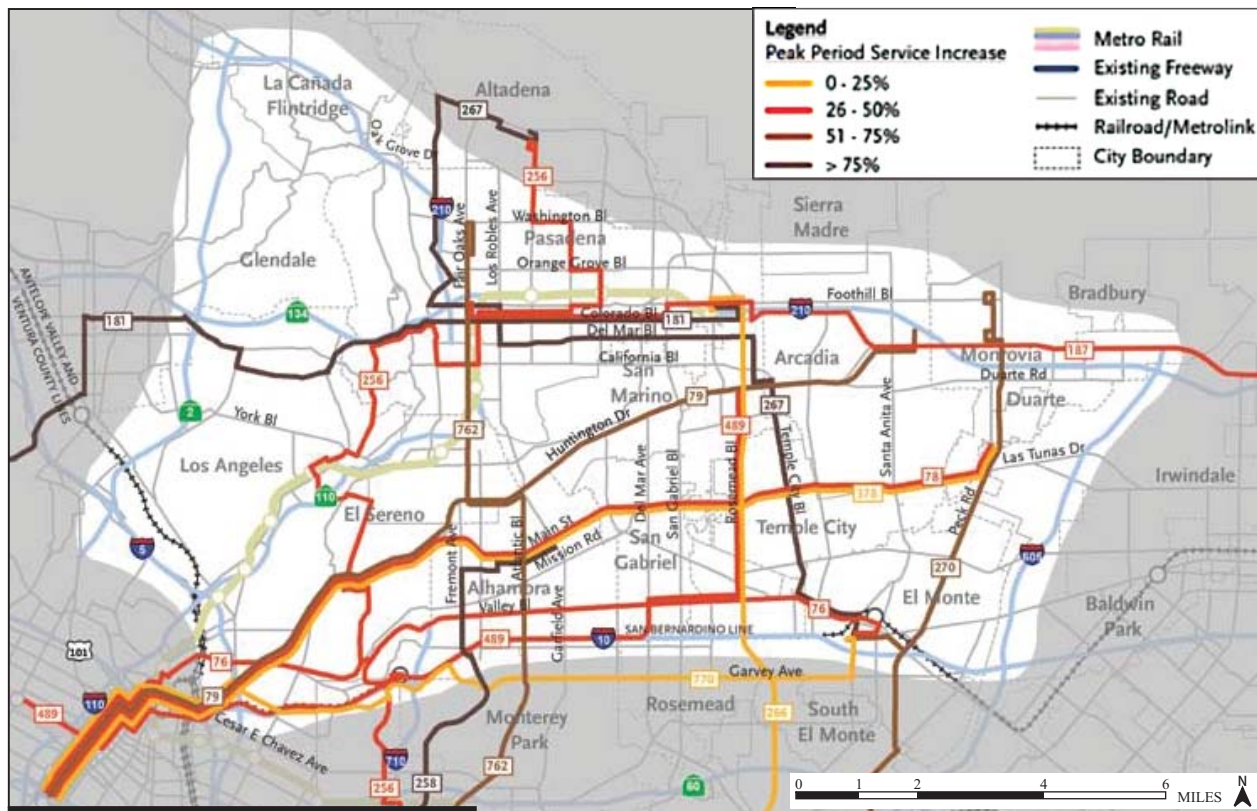
ITS Improvements



Local Street and Intersection Improvements



Transit Refinement



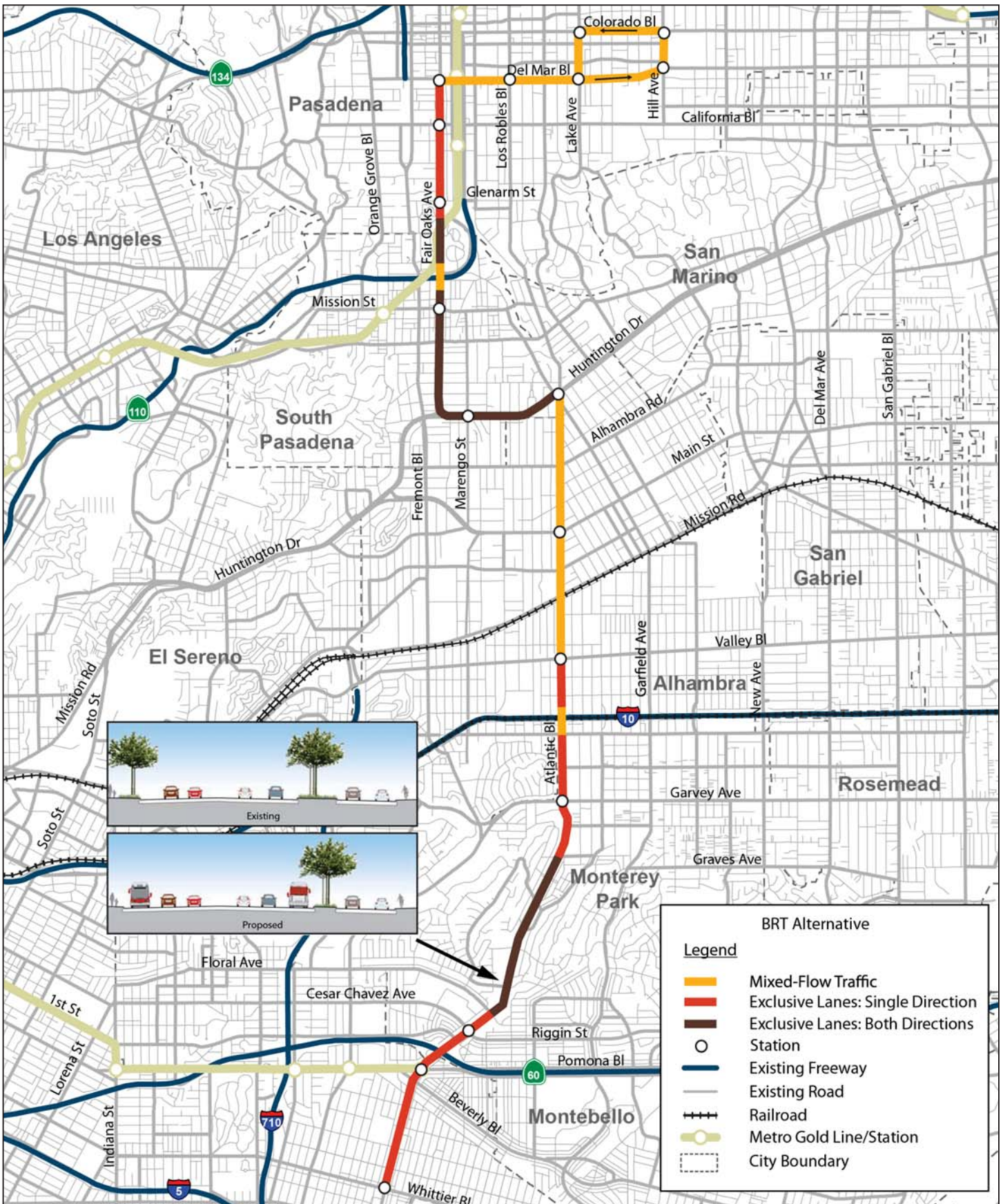


FIGURE 1-4



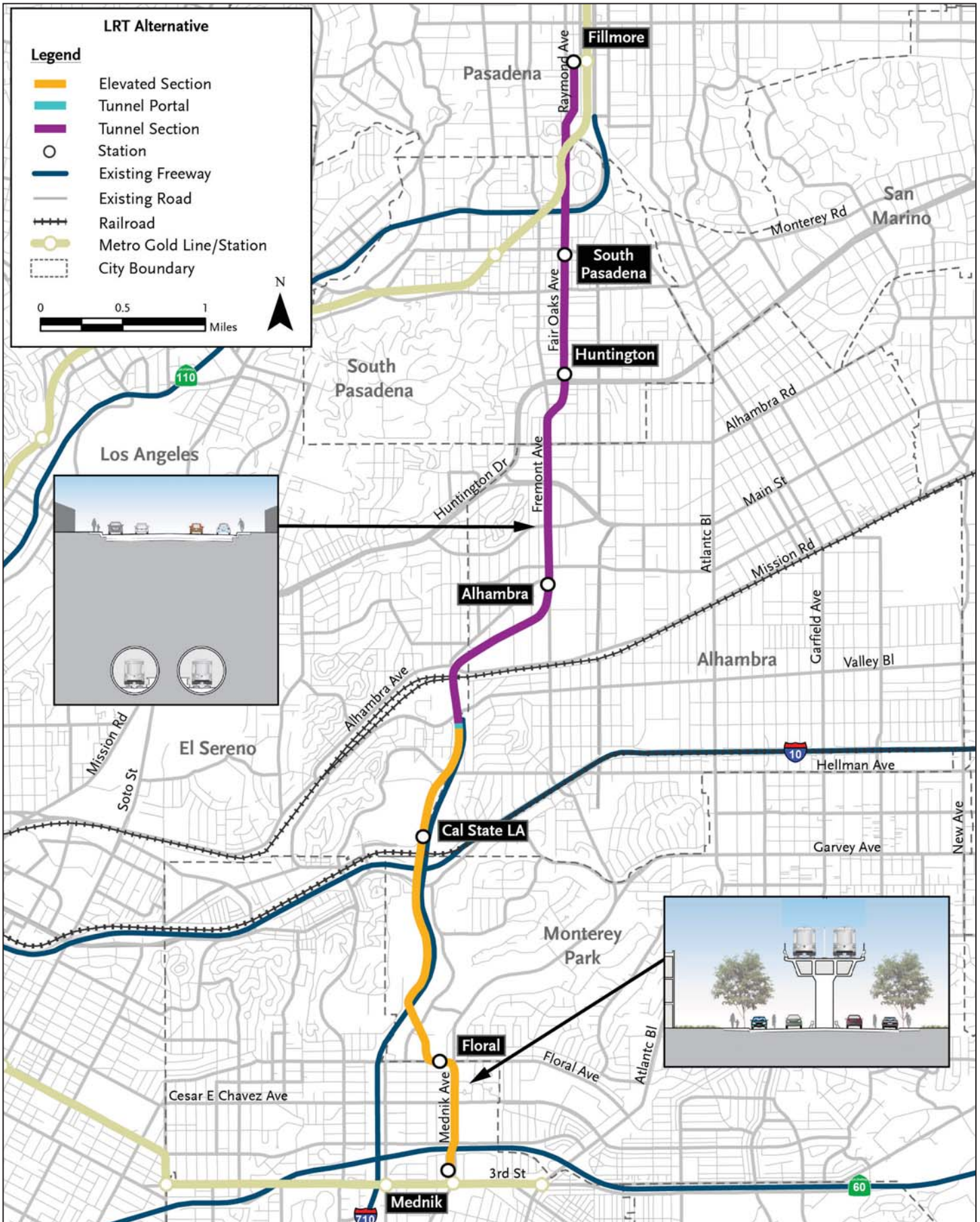
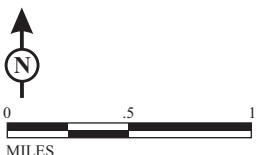


FIGURE 1-5



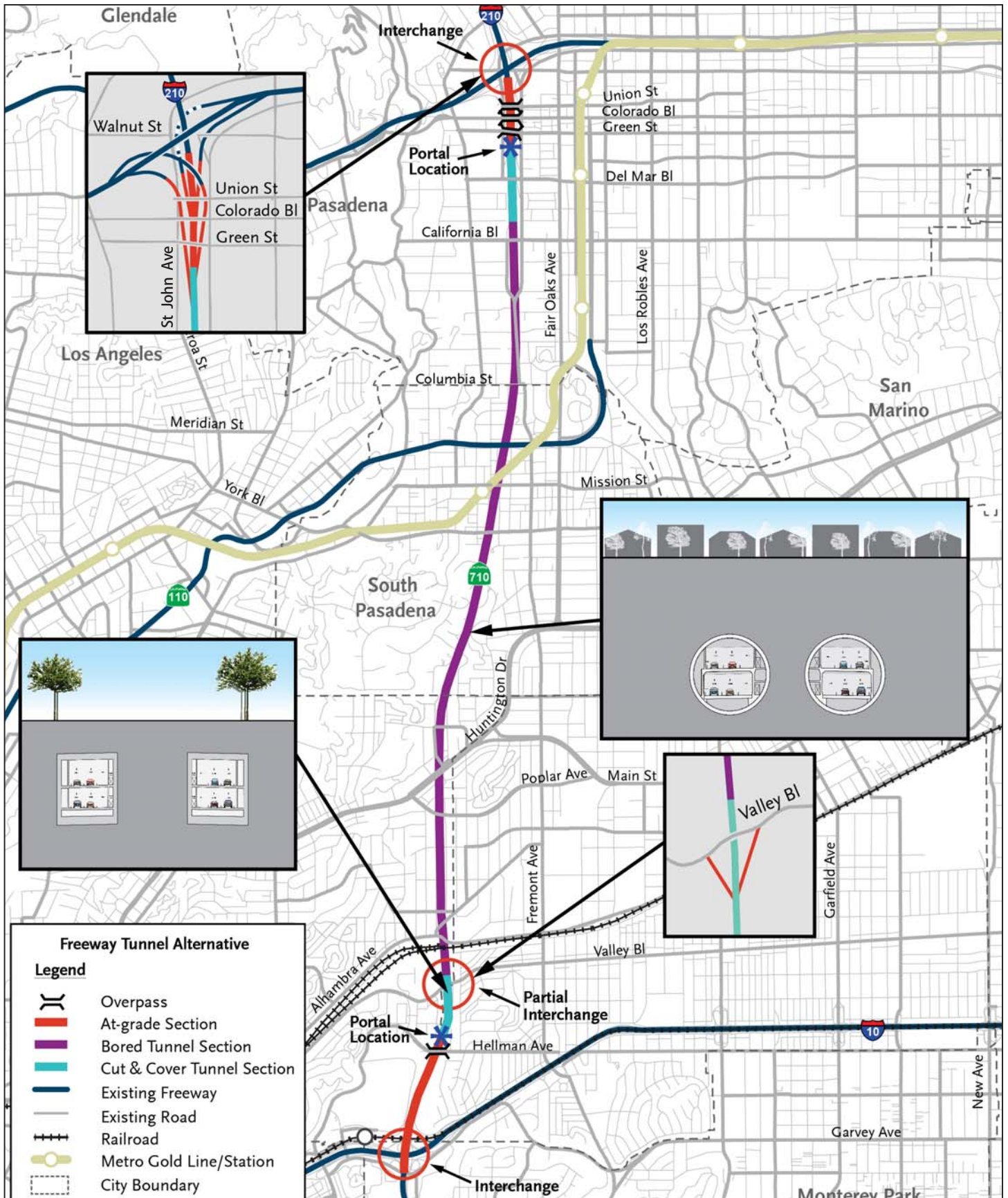


FIGURE 1-6



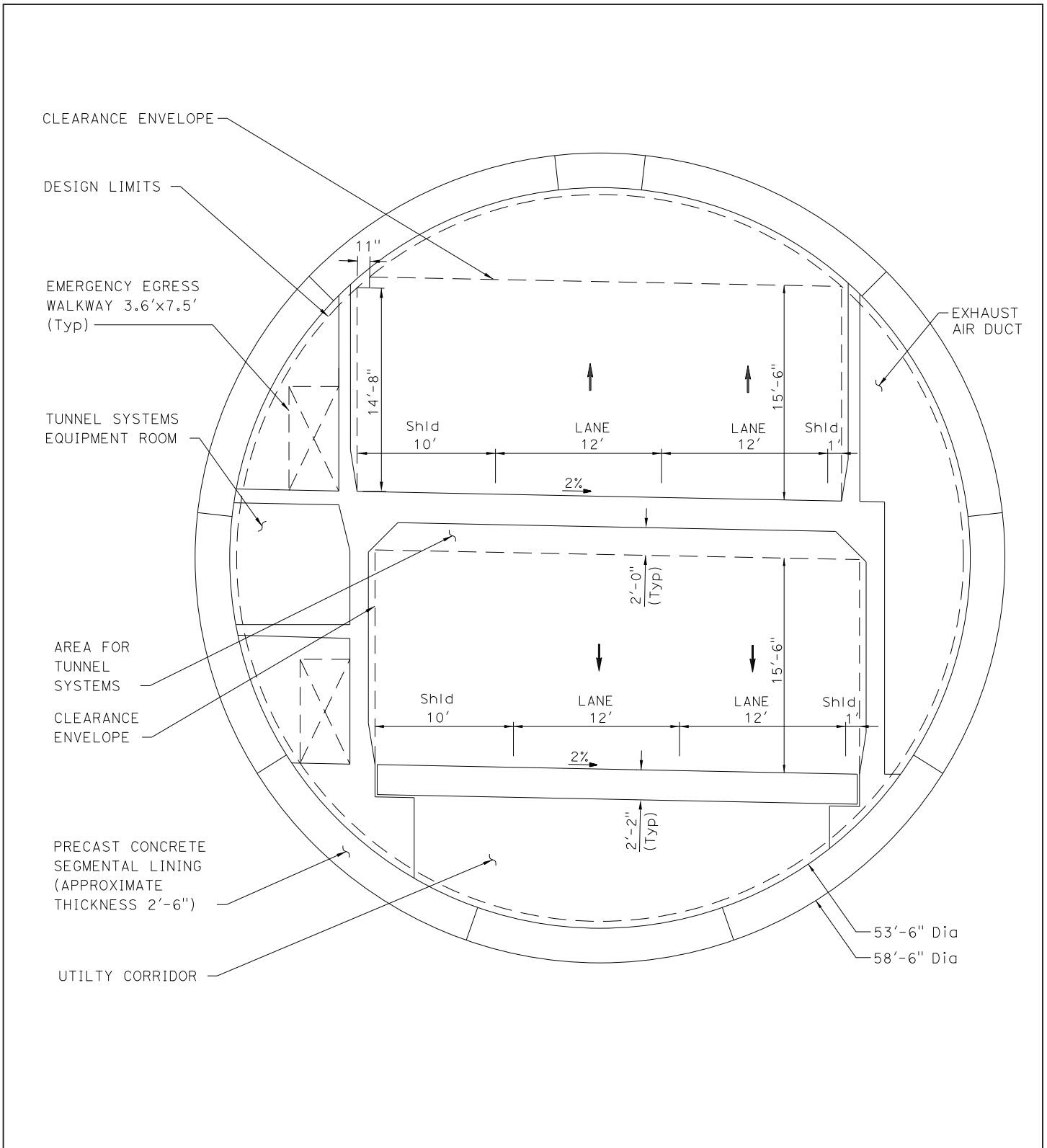


FIGURE 1-7

SR 710 North Study
 Freeway Tunnel Alternative
 Single Bore Cross Section
 07-LA-710 (SR 710)
 EA 187900
 EFIS 0700000191

Traffic Analysis Approach

2.1 Introduction and Overview

This section is an overview of the traffic analysis approach for the Environmental Impact Report/Environmental Impact Statement (EIR/EIS). A customized approach was developed to address the range of alternatives and multiple tools used. This section addresses the following topics:

- **Alternatives Analysis and EIR/EIS Modeling (Section 2.2):** The initial modeling was performed to support the Alternatives Analysis (AA) completed in 2012 (AECOM, 2012). An updated analysis using a new version of the regional model was prepared for the EIR/EIS. A brief description is provided in this section.
- **Use of Travel Demand and Traffic Operations Models (Section 2.3):** Both travel demand modeling and traffic operations modeling were performed. Summaries of these efforts and further references are provided in this section.
- **Alternatives and Freeway Tunnel Alternative Variations Evaluated (Section 2.4):** Five alternatives have been evaluated for transportation: No Build, TSM/TDM, LRT, BRT, and Freeway Tunnel.
- **Analysis Years (Existing, Opening, Horizon) (Section 2.5):** The analysis years and study area are identified in this section.
- **Traffic Operations Analysis Area (Section 2.6):** This section defines the limits of the study areas used for both travel demand modeling and operations modeling and analysis.
- **Multimodal Approach (Section 2.7):** The alternatives analyzed included both highway and transit improvements. Processes used to support multimodal forecasting and analysis are summarized in this section and described in greater detail in Section 3.
- **Coordination with Environmental Disciplines (Section 2.8):** Input to the EIR/EIS environmental impacts of the alternatives under study are being forecast and analyzed. This section briefly describes how travel demand and traffic operations forecasts are being used to inform these environmental tasks.

2.2 Alternatives Analysis and EIR/EIS Modeling

A multistep approach was used to conduct a traffic analysis consisting of the screening analysis and the AA (EIR/EIS). A comprehensive analysis was conducted for the AA phase, using the then-current regional travel demand model (SCAG 2008 RTP) as the basis. That modeling effort was focused on screening alternatives from a much larger set of alternatives. For the EIR/EIS, a more detailed analysis was conducted using an updated model (SCAG Version 6.1, updated from SCAG Version 6.0). The updates to the SCAG model were extensive and included improved representation of road tolling and of traveler behaviors such as alternative mode (that is, public transit) and time-of-day system usage. Each analysis was conducted using appropriate tools for the specific modeling requirements. Due to the availability of model versions and their release, different versions of the SCAG model were applied throughout the multistep process.

The two phases used a consistent approach, but the available tools and descriptions of the alternatives were somewhat different. No direct comparison of results generated from the two modeling efforts is provided due to their qualitatively different inputs, assumptions, and results. More details on the modeling process are provided in Section 3.

2.3 Use of Travel Demand and Traffic Operations Models

For the EIR/EIS, both travel demand modeling and operations analysis were used to assess alternatives. The two sets of analyses each provided unique tools, resulting in useful information.

The travel demand modeling results are provided in Section 4. That modeling effort was focused on regional performance and traffic volumes on groups of facilities (freeway, arterials, etc.). The travel demand modeling included information on travel routes and patterns. It also provided projections of transit usage.

The operations analysis results are provided in Section 5 and include both freeway segments and intersections. The operations analysis was focused on level of service (LOS), and based on data from the travel demand modeling. LOS analysis was focused on the details of mainline, ramp, and intersection traffic volumes at a more detailed level. The LOS analysis also will provide a basis for assessing the impacts of each alternative.

The Synchro (Version 8) and Highway Capacity Software (HCS) (Version 6.50) software packages were used for traffic operations analysis. Both software tools use analytical methodologies, using standard algorithms for calculating LOS. With these tools, model calibration is not used, although the existing conditions analysis (described in Section 5.2) is based on a validated set of existing traffic counts and local conditions.

2.4 Alternatives and Freeway Tunnel Alternative Variations Evaluated

As described in Section 1, five alternatives have been evaluated for transportation: No Build, TSM/TDM, LRT, BRT, and Freeway Tunnel.

Section 1.3.5 describes the Freeway Tunnel Alternative and the design and operational variations. For the transportation analysis, six variations were evaluated. These variations are combinations of the design variations (Section 1.3.5.1) and operational variations (Section 1.3.5.2). Not every permutation of the design and operational variations was analyzed, because the focus was on the variations that would have the best transportation system performance. The benefits of the operational variations can be determined by comparing the results of the analysis of different variations.

Table 2-1 is a summary of the six variations that were studied. The numbers indicate the order in which the analysis results are presented in this report. For example, the single bore with toll variation is always presented first, and the dual bore with toll variation is always presented last.

TABLE 2-1
Freeway Tunnel Variations Evaluated
SR 710 North Study, Los Angeles County, California

Operational Variation	Design Variation	
	Single Bore	Dual Bore
Freeway Tunnel Alternative without Tolls		4
Freeway Tunnel Alternative with Trucks Excluded		5
Freeway Tunnel Alternative with Tolls	1	6
Freeway Tunnel Alternative with Tolls and Trucks Excluded	2	
Freeway Tunnel Alternative with Toll and Express Bus	3	

2.5 Analysis Years (Existing, Opening, Horizon)

Travel demand modeling analysis focused primarily on AM and PM peak period and daily conditions. Traffic operations analysis focused primarily on AM and PM peak hour conditions. The year 2035 was selected for horizon year analyses because that is the forecast year with available data from SCAG. The opening years were selected based on the expected time of completion for each alternative. The TSM/TDM and BRT alternatives have a 2020 opening year analysis. The LRT and Freeway Tunnel Alternatives have a 2025 opening year analysis.

The following analysis scenarios were analyzed:

- Existing Conditions (2013)
- 2020 No Build Opening Year
- 2020 Build Opening Year
- 2025 No Build Opening Year
- 2025 Build Opening Year (all alternatives)
- 2035 No Build Horizon Year
- 2035 Build Horizon Year (all alternatives)

2.6 Traffic Operations Analysis Area

The travel demand model analysis included the SCAG region, Los Angeles County, and the EIR/EIS study area (described in Section 1, and shown in white in Figure 2-1). The traffic operations analysis used a focus area slightly larger than the study area for evaluating alternatives. The traffic operations analysis study area (illustrated in Figure 2-1) was selected to capture all freeway segments with potential changes in overall traffic for build alternatives.

Traffic operations analysis was conducted on a defined set of freeway segments and intersections for evaluation. The traffic operations analysis area is larger than the general EIR/EIS study area described in Section 1. Figure 2-1 is an illustration of the traffic operations analysis area (outlined in blue) and the EIR/EIS study area (in white).

A total of 156 intersections were identified for the intersection analysis. The intersections for evaluation are illustrated in Figure 2-2 and listed in Table 2-2. The intersections for evaluation were determined following an iterative screening process based on street classification, total volume, volume per approach, and distance from defined influence areas of the BRT, LRT, and Freeway Tunnel Alternatives. The BRT and LRT influence areas were defined as geographic areas buffering the alignment by 0.5 mile. The Freeway Tunnel Alternative influence area is defined as a geographic area buffering the tunnel alignment by 0.5 mile. Another 33 intersections were identified as TSM/TDM intersections. The intersections include major arterial, minor arterials, and ramp terminals.

Figure 2-3 is an illustration of the freeway study area. The freeway study area was determined by including freeways inside the EIR/EIS study area and by comparing traffic volume changes between the 2035 No Build Alternative and the 2035 dual-bore variation of the Freeway Tunnel Alternative model runs for freeways outside the study area. The dual-bore tunnel alternative was selected as the basis for comparison since it is expected to result in the most positive and negative changes in traffic volumes on the freeways in the region. The trigger for including a freeway was the percent change (greater than ± 5 percent) in average daily traffic (ADT), AM peak period, and PM peak period volumes.

Table 2-3 is a summary of the traffic operations analysis freeway segments. The majority of freeway segments studied are within the EIR/EIS study area. Freeway segments outside the EIR/EIS study area are:

- I-5 (between SR 2 and SR 134)
- SR 60 (between I-5 and I-605)
- SR 134 (between I-5 and SR 2)
- I-210 (between I-5 and SR 2)
- I-605 (between SR 60 and I-10)
- I-710 (from I-5 to north of SR 60)

TABLE 2-3
Freeway Segments for Evaluation
SR 710 North Study, Los Angeles County, California

Freeway	Direction in Study Area	From (West or South Limit)	To (East or North Limit)
SR 2	North/South	South of the I-5 interchange	North of the I-210 interchange
I-5	North/South	South of the I-710 interchange	North of the SR 134 interchange
I-10	East/West	West of the I-5 interchange	East of the I-605 interchange
SR 60	East/West	West of the I-5 interchange	East of the I-605 interchange
SR 110	North/South	South of the I-5 interchange	North of Fair Oaks Avenue interchange
SR 134	East/West	West of the I-5 interchange	East of the I-210 interchange
I-210	East/West	East of the I-5 interchange	East of the I-605 interchange
I-605	North/South	South of the SR 60 interchange	I-210 interchange
I-710	North/South	South of the I-5 interchange	North of the I-10 interchange
SR 710	North/South	North of the I-10 interchange	SR 134/I-210 interchange

2.7 Multimodal Approach

For the EIR/EIS analysis, a fully integrated multimodal travel model was utilized. Previously (for the AA), this was not possible due to the limited description of transit networks and mode choice behaviors in the current SCAG model version (SCAG 2008 RTP) at the time. SCAG model Versions 6.0 and 6.1 incorporated an expanded and enhanced network and zone system and implemented the Metro mode choices models directly within the SCAG platform. This allowed the SCAG model to be effectively utilized for the full range of multimodal forecasting and analysis.

2.8 Coordination with Environmental Disciplines

Information generated by the EIR/EIS travel modeling process was also used as input to a range of environmental analyses. The outputs of the travel model were applied to air quality, noise impact, health risk assessment, parking, and energy analysis.

TABLE 2-2
Intersections for Evaluation
SR 710 North Study, Los Angeles County, California

No.	North/South Street	East/West Street	No.	North/South Street	East/West Street	No.	North/South Street	East/West Street	No.	North/South Street	East/West Street
Alhambra			36	Peck Road	I-10 eastbound ramps	Monterey Park			123	Del Mar Avenue	Valley Boulevard
1	Atlantic Boulevard	Glendon Way	37	Peck Road	Lower Azusa Road	79	Atlantic Boulevard	Cesar Chavez Avenue	124	Rosemead Boulevard	Huntington Drive
2	Atlantic Boulevard	Main Street	38	Peck Road	Valley Boulevard	80	Atlantic Boulevard	Garvey Avenue	125	San Gabriel Boulevard	Las Tunas Drive
3	Atlantic Boulevard	Mission Road	39	Santa Anita Avenue	I-10 eastbound ramps	81	Atlantic Boulevard	SR 60 eastbound ramps	126	San Gabriel Boulevard	Marshall Street
4	Atlantic Boulevard	Valley Boulevard	40	Santa Anita Avenue	Lower Azusa Road	82	Atlantic Boulevard	SR 60 westbound ramps	127	San Gabriel Boulevard	Mission Road
144	Fremont Avenue	Alhambra Road	41	Santa Anita Avenue	Valley Boulevard	83	Mednik Avenue/ Corporate Center Drive	Floral Drive	128	San Gabriel Boulevard	Valley Boulevard
5	Fremont Avenue	Commonwealth Avenue	42	Tyler Avenue	Valley Boulevard	Pasadena			129	Walnut Grove Avenue	Broadway
6	Fremont Avenue	Concord Avenue	43	Valley Boulevard	Garvey Avenue	84	Arroyo Seco Parkway	California Boulevard	San Marino		
7	Fremont Avenue	Hellman Avenue	Glendale			85	Arroyo Seco Parkway	Colorado Boulevard	130	Atlantic Boulevard	Garfield Avenue
8	Fremont Avenue	Main Street	44	Harvey Drive	Wilson Avenue	86	Arroyo Seco Parkway	Del Mar Boulevard	131	Atlantic Boulevard	Huntington Drive
9	Fremont Avenue	Mission Road	Irwindale			87	Fair Oaks Avenue	California Boulevard	132	Del Mar Avenue	Huntington Drive
149	Fremont Avenue	Montezuma Avenue	45	Myrtle Avenue	Longden Avenue	88	Fair Oaks Avenue	Corson Street (I-210 eastbound off-ramp)	133	El Molino Avenue	Huntington Drive
10	Fremont Avenue	Norwood Avenue	46	Peck Road/Myrtle Avenue	Live Oak Avenue	89	Fair Oaks Avenue	Del Mar Boulevard	134	Garfield Avenue	Huntington Drive
11	Fremont Avenue	Poplar Boulevard	La Cañada Flintridge			90	Fair Oaks Avenue	Maple Street (I-210 westbound on-ramp)	135	Oak Knoll Avenue	Huntington Drive
12	Fremont Avenue	Valley Boulevard	47	Angeles Crest Highway	Foothill Boulevard	91	Fair Oaks Avenue	Mountain Street	136	San Gabriel Boulevard	Huntington Drive
13	Garfield Avenue	Glendon Way	48	Gould Avenue	Foothill Boulevard	92	Fair Oaks Avenue	Orange Grove Boulevard	137	San Marino Avenue	Huntington Drive
14	Garfield Avenue	Main Street	49	I-210 eastbound ramps	Berkshire Place	93	Fair Oaks Avenue	Raymond Hill Road	138	Virginia Road	Huntington Drive
15	Garfield Avenue	Mission Road	50	I-210 eastbound ramps	Foothill Boulevard	94	Fair Oaks Avenue	Walnut Street	South Pasadena		
16	Garfield Avenue	Norwood Place	51	I-210 westbound ramps	Berkshire Place	95	Hill Avenue	Corson Street (I-210 eastbound ramps)	139	Fair Oaks Avenue	Huntington Drive
17	Garfield Avenue	Valley Boulevard	52	I-210 westbound ramps	Foothill Boulevard	96	Hill Avenue	Maple Street (I-210 westbound ramps)	140	Fair Oaks Avenue	Mission Street
18	Huntington Drive	Main Street	53	Ocean View Boulevard	Foothill Boulevard	97	I-210 eastbound ramps	Mountain Street	141	Fair Oaks Avenue	Monterey Road
150	Marengo Avenue	Main Street	54	SR 2 ramps	Foothill Boulevard	98	I-210 westbound ramps	Mountain Street	142	Fair Oaks Avenue	SR 110 northbound off-ramp
151	Marengo Avenue	Mission Road	55	Verdugo Boulevard	Foothill Boulevard	99	Lake Avenue	Corson Street (I-210 eastbound ramps)	143	Fair Oaks Avenue	SR 110 southbound on-ramps
152	Marengo Avenue	Valley Boulevard	Los Angeles			100	Lake Avenue	Maple Street (I-210 westbound ramps)	145	Fremont Avenue	Huntington Drive
19	SR 710 northbound off-ramp	Valley Boulevard	56	Avenue 20	Broadway	101	Lincoln Avenue	Orange Grove Boulevard	146	Fremont Avenue	Monterey Road
20	SR 710 southbound on-ramp	Valley Boulevard	57	Avenue 64	York Boulevard	102	Los Robles Avenue	Colorado Boulevard	147	Pasadena Avenue	Monterey Road
Arcadia			58	Broadway	Colorado Boulevard	103	Los Robles Avenue	Walnut Street	Temple City		
21	Baldwin Avenue	Foothill Boulevard	59	Collis Avenue	Huntington Drive	104	Marengo Avenue	Colorado Boulevard	148	Rosemead Boulevard	Las Tunas Drive
22	Baldwin Avenue	Huntington Drive	60	Concord Avenue	Alhambra Avenue	105	Marengo Street	Corson Street (I-210 eastbound ramps)			
23	Santa Anita Avenue	Duarte Road	61	Daly Street	Broadway	106	Marengo Street	Maple Street (I-210 westbound ramps)			
24	Santa Anita Avenue	Live Oak Avenue	62	Eagle Rock Boulevard	SR 2 ramps	107	Orange Grove Boulevard	Colorado Boulevard			
25	Sunset Boulevard	Huntington Drive	63	Eagle Rock Boulevard	Verdugo Road	108	Orange Grove Boulevard	Walnut Street			
Baldwin Park			64	Eagle Rock Boulevard	York Boulevard	109	Saint John Avenue	California Boulevard			
26	I-605 northbound ramps	Ramona Boulevard	65	Eastern Avenue	Huntington Drive	110	Saint John Avenue	Colorado Boulevard			
East Los Angeles			66	Figueroa Street	Avenue 26	111	Saint John Avenue	Del Mar Boulevard			
27	Atlantic Boulevard	Beverly Boulevard	67	Figueroa Street	Colorado Boulevard	112	San Rafael Avenue	SR 134 eastbound ramps			
28	Atlantic Boulevard	Pomona Boulevard	68	Figueroa Street	SR 134 eastbound ramps	113	San Rafael Avenue	SR 134 westbound ramps			
29	Atlantic Boulevard	Whittier Boulevard	69	Figueroa Street	SR 134 westbound ramps	114	Sierra Madre Boulevard	Del Mar Boulevard			
30	Campus Road	Ramona Boulevard	70	Figueroa Street	York Boulevard	Rosemead					
153	Mednik Avenue	Cesar Chavez Avenue	71	Griffin Avenue	Broadway	115	Rosemead Boulevard	Lower Azusa Road			
154	Mednik Avenue	First Street	72	Huntington Drive	Monterey Road	116	Rosemead Boulevard	Marshall Street			
155	Mednik Avenue	Floral Drive	73	Marengo Street	Mission Road	117	Rosemead Boulevard	Mission Drive			
East Pasadena			74	Pasadena Avenue	Broadway	118	Rosemead Boulevard	Valley Boulevard			
31	Rosemead Boulevard	California Boulevard	75	San Pasqual Avenue	York Boulevard	119	Temple City Boulevard	Valley Boulevard			
32	Rosemead Boulevard	Colorado Boulevard	76	Soto Street	Marengo Street	120	Walnut Grove Avenue	Mission Drive			
El Monte			200	Eagle Rock Boulevard	Colorado Boulevard	121	Walnut Grove Avenue	Valley Boulevard			
33	Baldwin Avenue	Valley Boulevard	Monrovia			San Gabriel					
34	Durfee Avenue	Valley Boulevard	77	Myrtle Avenue	Duarte Road	122	Del Mar Avenue	Mission Road			
35	Peck Road	Garvey Avenue	78	Myrtle Avenue	I-210 eastbound ramps						

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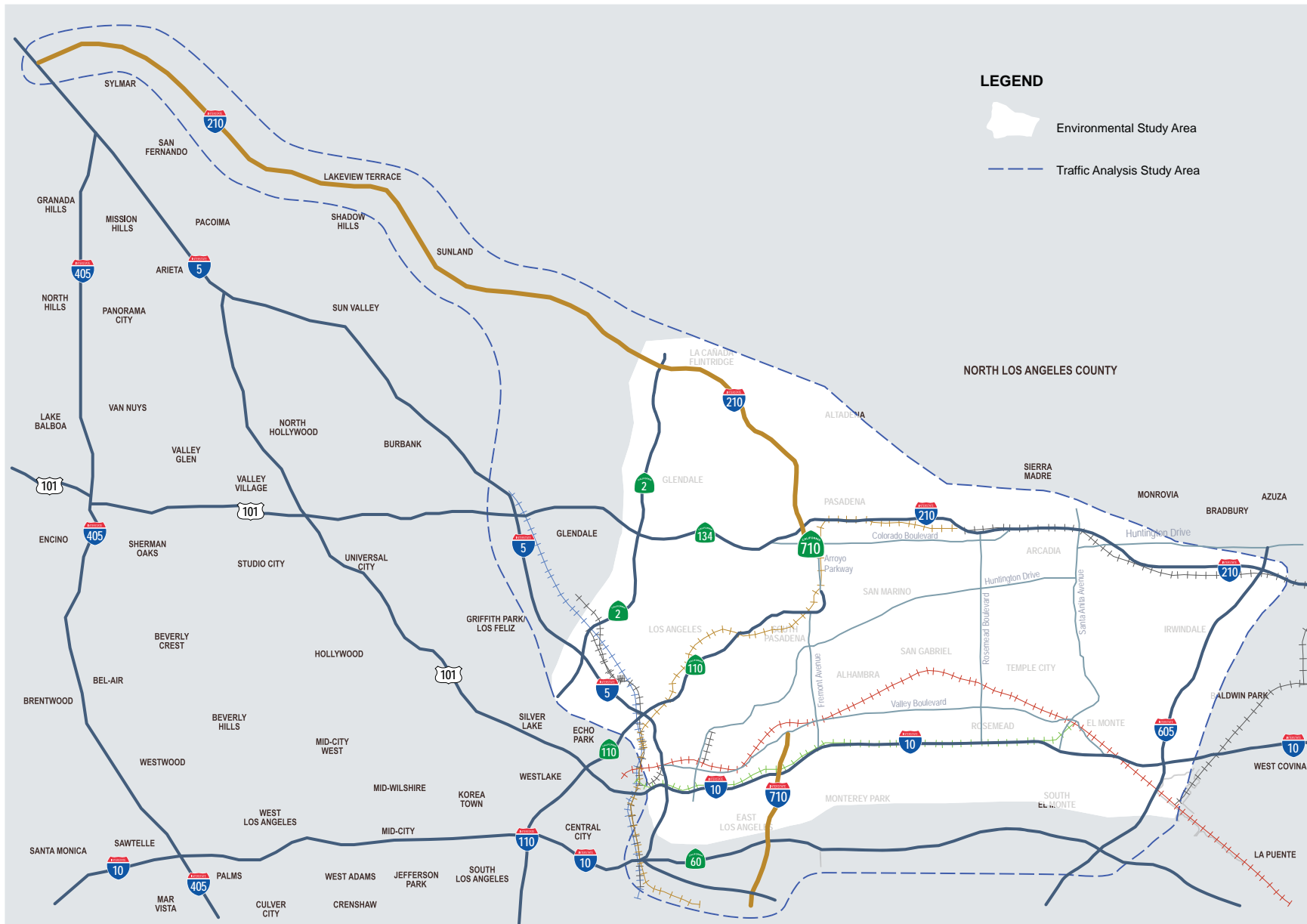
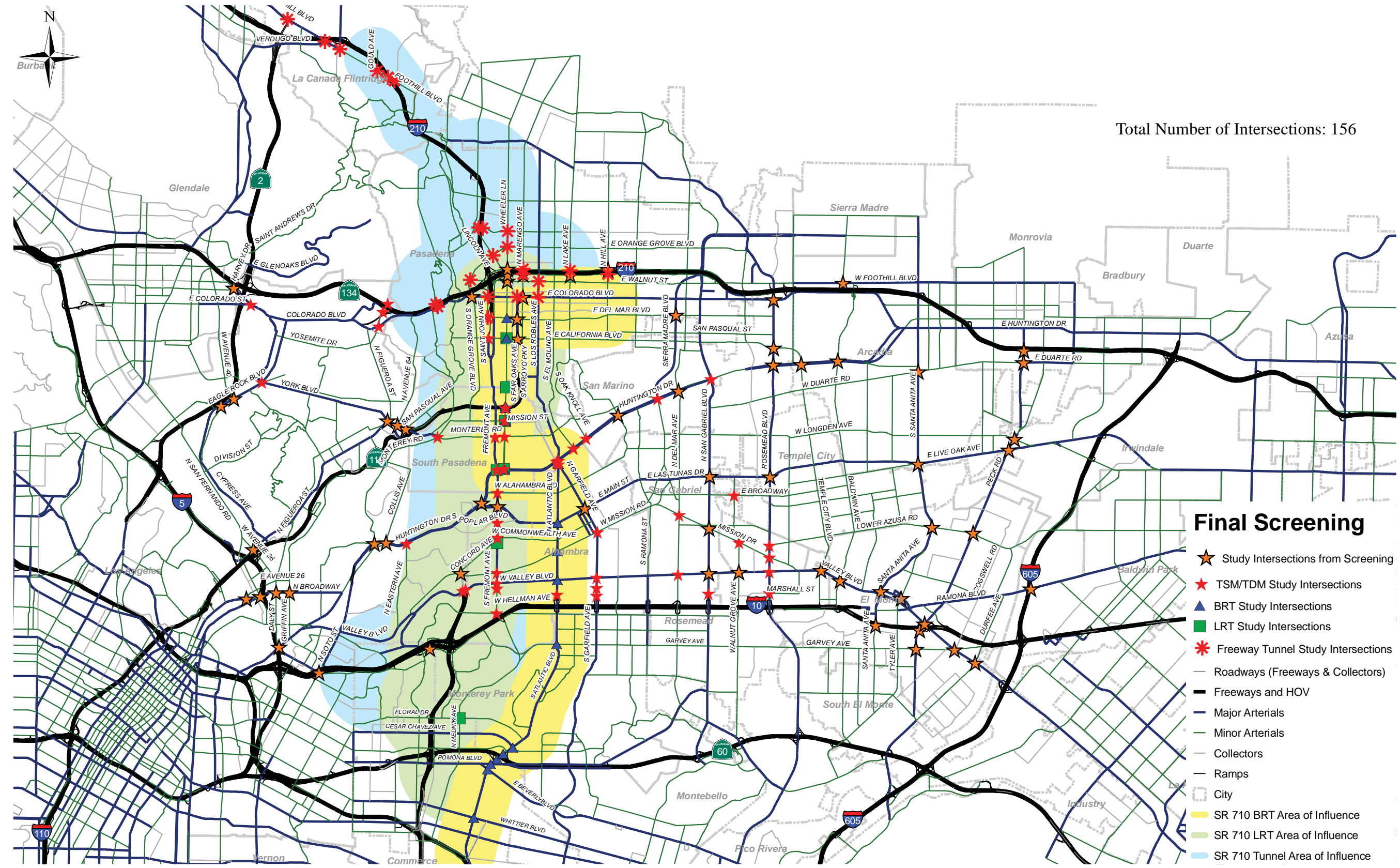


FIGURE 2-1
Traffic Operations Analysis Area
 SR 710 North Study
 Los Angeles County, California



Total Number of Intersections: 156



Final Screening

- ★ Study Intersections from Screening
- ★ TSM/TDM Study Intersections
- ▲ BRT Study Intersections
- LRT Study Intersections
- * Freeway Tunnel Study Intersections
- Roadways (Freeways & Collectors)
- Freeways and HOV
- Major Arterials
- Minor Arterials
- Collectors
- Ramps
- City
- SR 710 BRT Area of Influence
- SR 710 LRT Area of Influence
- SR 710 Tunnel Area of Influence

FIGURE 2-2
Intersections for Evaluation
 SR 710 North Study
 Los Angeles County, California

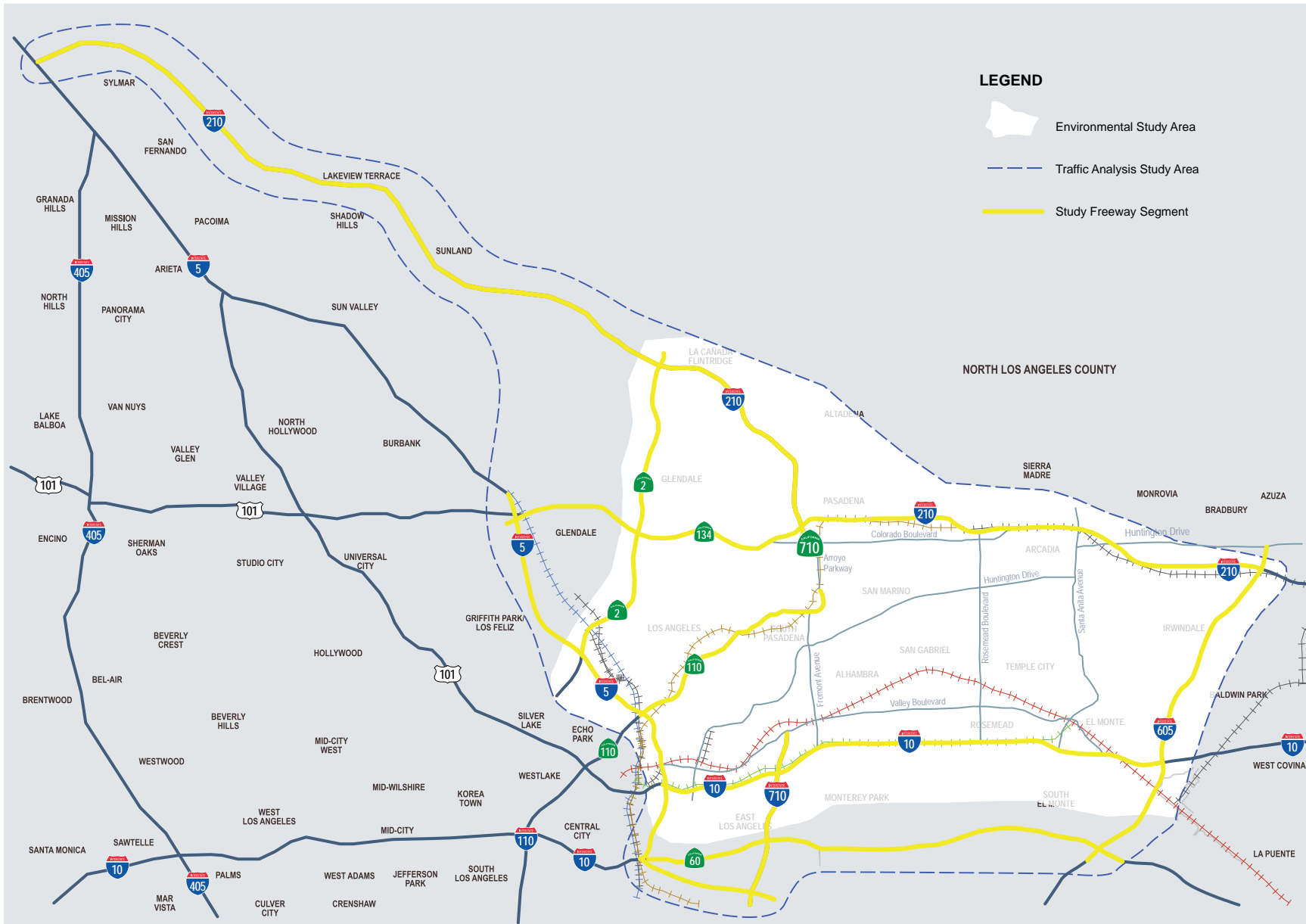


FIGURE 2-3
Freeways for Evaluation
 SR 710 North Study
 Los Angeles County, California

Application of the Travel Demand Model

3.1 Overview of SCAG Model/History

Part 1 (AA) of the SR 710 EIR/EIS study evaluated multiple alternatives using a travel demand modeling (forecasting) process that combined the SCAG 2008 RTP travel demand model and the Metro Measure R transit forecasting model. The blended model approach was designed to take advantage of the strengths of each tool (highway and transit forecasts). The blended model approach was developed in December 2011 by a working group made up of technical experts from Caltrans, Metro, SCAG, and the consulting team.

The EIR/EIS analysis was based on a revised and more detailed modeling approach that took advantage of model improvements associated with the 2012 SCAG RTP model. SCAG updated the model used for the 2012 RTP process with several computational improvements; the updated model is referred to as SCAG Version 6.1.

The major improvements in the SCAG Version 6.1 model included new highway/transit network descriptions, updated zone (traffic analysis zone) definitions, and incorporation of updated and improved modeling of mode choice. The updated model further enhanced modeling capabilities with improved highway and truck toll models and a new time-of-day model sensitive to traveler characteristics and congestion. The updated model also incorporated significant computational improvements to reduce model runtimes.

The Version 6.1 time-of-day procedures replace the fixed period and directional factors with statistical models that calculate the probability of the trip occurring in 31 different time slots throughout the day. The time slice definitions are shown in Table 3-1. The equations are specified separately for Home-Based Work Direct (HBWD) trips, Home-Based Work Strategic (HBWS) trips, Home-Base Shopping (HBSH) trips, Home-Base Other (HBO) trips, and Other-Based Other (OBO) trips for both the production to attraction and attraction to production direction of the trip for a total of 310 separate equations.

The equations (specified in a logit formulation) include coefficients for delay, distance, household income, household size, age, driving alone, population, and retail employment densities at the origin and destination as well as a constant. For the purposes of adjusting the time-of-day distribution, only the constants were changed. Time-of-day models were separately specified for commercial vehicles (trucks).

TABLE 3-1
Definitions of Time-of-Day Time Slices
SR 710 North Study, Los Angeles County, California

	Model Period	Hours	Time-of-Day Time Slices
AM Peak	6:00 AM – 9:00 AM	3 hours	Six 30-minute slices
Midday Peak	9:00 AM – 3:00 PM	6 hours	Twelve 30-minute slices
PM Peak	3:00 PM – 7:00 PM	4 hours	Eight 30-minute slices
Evening	7:00 PM – 9:00 PM	2 hours	Four 30-minute slices
Night	9:00 PM – 6:00 AM	9 hours	One 9-hour slice

3.2 Adaptation/Enhancement of the SCAG Model to the SR 710 North Model

The SR 710 North model utilizes the setup of the SCAG Version 6.1 model with the following modifications:

- The SR 710 North model uses the logsum and mode choice estimation software from the SCAG 2012 RTP model (also referred to as Version 6.0). Though the formulation of logsum and mode choice are the same for both Version 6.0 and Version 6.1, continuing issues with parallel model outputs under different computer operating conditions resulted in re-incorporating software and procedures used for Version 6.0 into the Version 6.1 model environment.
- Changes in network descriptions to better match ground data, updates to the time-of-day models to better match current known conditions, and miscellaneous changes and updates to model scripting to augment model assumptions and parameters and correct minor identified problems were made.

The SR 710 North model has been adjusted to improve the calibration of the transportation network outputs to observed travel data in the study area. These improvements include model network definition, model parameter and coefficient changes, and model process (scripting) changes. Some of the process changes were implemented to correct issues with the model as provided by SCAG. These issues have been shared with SCAG for their model improvement.

During the process of modifying the SCAG Version 6.1 model for use in the SR 710 North Study, the study team was unable to replicate results from models run by SCAG. The study team also noted different model results due to software versions and hardware specifications. These differences resulted in the software processing changes discussed above. Control of these differences was limited in the model runs on multiple computers by matching software versions and hardware setups.

Extensive testing and analysis resulted in the following conclusions:

- Differences are minor and do not significantly change model results.
- The cause of the differences is largely random.
- Differences were not evident in the SCAG 2008 or 2012 RTP travel demand models, but are evident in the SCAG Version 6.1 model.
- All differences except those introduced by the traffic assignment process were eliminated by the process and software updates implemented to support the SR 710 North model.

Analysis showed that the difference introduced by the randomness is minor but the possibility does lead to the caution of applying too much emphasis on any one performance measure. Basing conclusions on the preponderance of results and trends and the relative differences of alternative results is appropriate.

3.3 Validation Summary

The SR 710 North model was calibrated to peak period and daily auto and transit observed data in the study area and the surrounding area. The model was adjusted to better represent the supply characteristics (highway and transit service) and the demand for travel in the corridor. The improvements were designed to maintain the overall integrity of the regional model while providing a better replication of observed conditions in the study area. The most critical element of the validation is that the model is consistent with reality (existing conditions) and the changes can be captured with forecasts, not just changes in the base model to improve validation statistics. The base SCAG model was adjusted to improve validation in the study area in several ways, including trip table adjustments, time-of-day factor adjustments, highway and transit network corrections, and model parameters.

The model results are compared to observed traffic data collected from various sources, and evaluated based on guidance from the Federal Highway Administration (FHWA) *Model Reasonableness and Checking Manual* (FHWA, 2010) and from the Caltrans *Travel Forecasting Guidelines* (Caltrans, 1992).

These metrics are calculated for the AM and PM peak periods and for the total day and they include the following:

- Highway volume related validation measures
 - Count to volume ratio over all counts segmented by facility type and period
 - Root mean square error (RMSE) of the model volume to the observed traffic count data
 - Coefficient of determination (R^2) of the model volume to the observed traffic count data
 - Percent of count locations within the accepted Caltrans deviation
 - Visual analysis of a scatter plot of model volume versus observed volumes
- Highway screenline and cordon count validation measures
 - Study area cutline model volume versus observed volume
- Highway travel time related validation measures
 - Comparison of model travel times to observed travel times
- Aggregate transit measures
 - Home Based Work and non-work trip tables compared to on-board transit surveys
 - Mode level trips compared to on-board surveys
- Detailed transit route measures
 - Comparison of assigned transit boardings to transit route counts

The detailed validation results are presented in the SR 710 North Model Validation Report (CH2M HILL, 2013), which is included in Appendix A. A brief selection of results can be seen in Table 3-2. This table presents the percent difference of counts to modeled volumes in the study area by period and facility type; the RMSE and R^2 , which are measures of model accuracy; and the percent of links within the Caltrans standard deviations. Table 3-3 provides a high-level assessment of the transit boardings in the study area by mode.

TABLE 3-2
Aggregate Highway Model Validation Statistics in Study Area
SR 710 North Study, Los Angeles County, California

Agency Guidance	AM Period	PM Period	ADT
SR 710 North Model – Count to Model Volume Comparison			
Caltrans and FHWA Guidance:			
Freeways +/- 7%	3%	5%	14%
Major Arterials +/- 10%	14%	-14%	14%
Minor Arterials +/- 15%	9%	-26%	4%
SR 710 North Model – RMSE			
Caltrans and FHWA Guidance:			
FHWA <40 for Periods, <30 Daily			
Caltrans < 40			
%RMSE	39	34	42
SR 710 North Model – R^2			
Caltrans and FHWA Guidance:			
R^2 (Target ≥ 0.88)	0.94	0.95	0.96
SR 710 North Model – % of Links within Caltrans Standard Deviation			
Caltrans Guidance:			
% of Links within Caltrans Standard Deviations (Target ≥ 0.75)	74%	81%	57%

Caltrans criteria are from *Travel Forecasting Guidelines* (Caltrans, 1992).

FHWA criteria were obtained from *Model Validation and Reasonableness Checking Manual* (FHWA, 2010).

TABLE 3-3
SR 710 North Study Area Observed and Modeled Transit Boardings by Mode
SR 710 North Study, Los Angeles County, California

Transit Mode	2012 Observed Boardings			2012 Modeled Boardings			Percent Difference		
	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Commuter Rail	-	-	13,003	8,480	1,350	9,830	-	-	-24.4%
Urban Rail ¹	193,919	169,530	363,449	200,589	162,827	363,416	3.4%	-4.0%	0.0%
Orange BRT ¹	14,668	12,565	27,233	14,367	13,324	27,691	-2.1%	6.0%	1.7%
Metro Bus ²	70,820	66,158	136,978	84,592	47,351	131,943	19.4%	-28.4%	-3.7%
Foothill Locals ²	15,195	8,750	23,945	15,985	12,972	28,958	5.2%	48.3%	20.9%
Total	294,602	257,003	564,608	315,533	236,475	561,839	7.1%	-8.0%	-0.5%

¹ Peak/off-peak splits from 2008 Transit On-Board Survey (Metro, 2008)

² 2008 observed; local and rapid buses

For study area links and locations, most of the criteria from the FHWA and Caltrans guidance are met, but some are not. It is important to note that neither the FHWA nor Caltrans guidance specifies criteria that must be met to satisfy model acceptance. Both agencies provide guidance on acceptance thresholds that are dependent on available data and resources, the purpose, the intended use, and other decisions that must be supported by the model.

The SR 710 North model has been validated against available data sources and was determined to be acceptable to be applied for the SR 710 North EIR/EIS travel demand forecasting.

3.4 Coordination with the I-710 (South) Transportation Analysis Efforts

The SR 710 EIR/EIS North Study is being conducted in parallel with the I-710 South Transportation Study. Coordination between the two studies was required throughout the modeling process. Both of the projects are using the SCAG travel demand model as a base, and both have made improvements to the model to address specific project needs.

3.4.1 Model Version

The SR 710 North Study used the SCAG Version 6.1 model as a starting point for the development of the SR 710 North model. The SR 710 North model used the SCAG 2012 RTP mode choice process, but retained the other improvements in the Version 6.1 model. These improvements included updated congestion pricing time-of-day procedures.

The I-710 South Transportation Study used the SCAG 2012 RTP model Version 6.0 inputs with an older model (the SCAG 2008 RTP model) used first for the I-710 South Draft EIR/EIS. This model system was developed from SCAG's 2008 RTP model and included a number of network improvements and zone splits useful for both corridor studies. With the recent update to the I-710 South Study, the project team decided that incorporating the most up-to-date SCAG assumptions with the prior version of the model would be the most efficient way to develop new forecasts and to maintain comparability with prior forecasts.

3.4.2 Port and Domestic Intermodal Trucks

In the SR 710 North model, external truck trips were adjusted from the SCAG Version 6.1 model. Comparing the 2008 RTP and 2012 RTP models yields a forecasted growth rate of 10 percent for daily external truck trips. However, this forecast is not consistent with field data, and adjustments were made consistent with an analysis of available data. Within Los Angeles County, heavy-duty truck (HDT) volumes decreased by 10 percent from 2008 to 2011, based on Caltrans counts and PeMS data. The HDT model, which estimates the regional trucks based on households and employment types, is generating additional trucks for the port and intermodal zones. To correct

the HDT model, the auto and truck trips generated by the HDT model were adjusted. Truck time-of-day factors were adjusted to better match observed truck counts in the study area.

For the I-710 South model, port truck trips were replaced with the most current assumptions from the Port's travel demand model. Significant improvements were made for truck movements at off-dock rail yards for both port trucks and non-port trucks. In addition, port truck transload facilities were more explicitly defined. These truck categories account for significant travel on I-710.

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Travel Forecasting Results

4.1 Performance Measures

Performance measures allow for the impacts of transportation alternatives to be quantified. The performance measures used in this analysis are designed to focus on the transportation system (vehicular and transit) performance for the region and the study area. Additional performance evaluation for traffic operations is described and summarized in Section 5.

A total of 13 performance measures are organized into three categories: system, highway, and transit measures. Within each category, four or five performance measures are used to assess the range of potential impacts.

4.1.1 System Performance Measures

4.1.1.1 Total Vehicular Travel Distance

The total vehicular travel distance performance measure was developed to quantify the change in total average weekday vehicle miles traveled (VMT) for each alternative. Transportation improvements will result in changes of forecasted travel behavior. Depending on the alternative, the amount of travel may increase (due to increased mobility options, travelers may make longer trips to different destinations) or decrease (the development of a high-frequency transit option may shift travelers from automobiles to transit). VMT is a core input to understanding the total amount of automobile and truck travel in the region.

The calculation of VMT for all automobile and truck trips is completed using outputs from the model. VMT is calculated for the SR 710 North study area as the sum of link distance multiplied by the number of vehicles assigned to the link, for all links in a specified geography.

VMT is calculated separately for the AM (6:00 to 9:00) peak period, PM (3:00 to 7:00) peak period, and daily trips. The reported performance measure is the sum of the AM and PM peak periods, and the daily VMT.

4.1.1.2 Total Vehicular Travel Time

The total vehicular travel time performance measure was developed to quantify the change in total average weekday vehicular travel time for each alternative. Like VMT, vehicle hours traveled (VHT) is calculated for the SR 710 North study area. VHT is a link-based measure that is the sum of the total vehicle travel time on all links, based on a specific geographic definition.

VHT is calculated separately for the AM (6:00 to 9:00) peak period, PM (3:00 to 7:00) peak period, and daily trips. The reported performance measure is the sum of the AM and PM peak periods, and the daily VHT.

4.1.1.3 Daily Person Throughput

The daily person throughout performance measure was developed to quantify the total north-south travel (daily person trips) crossing an east-west screenline (Figure 4-1). Daily person throughput is a measure of all person trips crossing the screenline (vehicular and transit person trips).

Daily person travel on arterials and freeways was calculated using the daily volume of vehicle trips for drive-alone and shared-ride vehicles, and vehicle occupancy factors were used to calculate the number of person trips. The occupancy factors used for this calculation were obtained from the 2008 SCAG RTP travel model, and are 1.0 for drive-alone and truck trips, 2.0 for shared ride with one passenger, and 3.2 for shared ride with three or more passengers. The vehicular person trips are summed with the transit loads on routes crossing the screenline. The reported value was the total north-south daily person trips on arterials and freeways (in thousands) crossing the east-west screenline. This is the sum of the highway performance measure daily person trips on arterials, the number of daily person trip crossing the screenline on freeways, and the transit performance measure north-south transit throughput.

4.1.1.4 Employment Accessibility

The employment accessibility performance measure was derived to quantify how many jobs are accessible to residents within a defined time interval from multiple locations. For this measure, 12 origin areas in the study area were chosen to determine employment accessibility. The origin areas are:

- Alhambra
- Arcadia
- Cal State LA
- Eagle Rock
- El Monte Transit Center
- Glendale
- La Cañada Flintridge Town Center
- Pasadena Memorial Park
- South Pasadena
- San Marino
- San Gabriel
- Temple City

Figure 4-2 is a map of the origins that were used.

The calculation for employment accessibility is the sum of the number of jobs accessible to residents of the study area within 29.4 minutes of 12 origin locations. The value of 29.4 minutes was selected for this performance measure because that is the average travel time to work for workers 16 and older in Los Angeles County, based on the 2010 American Community Survey by the U.S. Census Bureau (<http://factfinder2.census.gov>). (The national average of 25.3 minutes of travel time was used in the AA phase, but the more focused Los Angeles County measure was applied based on comments received in the AA phase. The data are similar with either value.) Model travel times were used to calculate the travel time from the 12 origins to all locations of employment in the SCAG region.

The number of jobs reachable within 29.4 minutes in peak periods was summarized for drive-alone vehicles and shared-ride vehicles. The average number of jobs accessible from 12 origin areas was determined. The number of jobs was calculated separately from each origin, but combined so that no job is double-counted. The alternatives increase job accessibility compared with the No Build Alternative. The employment accessibility performance measure is reported as the total percent increase of accessible jobs for each alternative over the No Build Alternative.

4.1.2 Highway Performance Measures

4.1.2.1 Volume Served

The performance measure for volume served is defined as regional north-south vehicular throughput served on the freeway and arterial systems. Comparing the daily volumes on freeways and arterials across the east-west screenline (Figure 4-1) provides a metric of the location of traffic moving through the study area. Typically, longer-distance trips use the freeway system. Often, with a congested freeway system, there is a shift in travel from the freeway system to the arterial system. The travel on the arterial system is induced by freeway congestion, and thus reduces the speeds and increases the delays on the arterials.

Vehicle throughput was measured separately for the arterial and the freeway systems. The measurement is calculated as the daily volume of vehicles that cross the east-west screenline. Looking at these two performance measures together provides a good indication of how well the system is working for regional and local trips.

4.1.2.2 Traffic Diversion to Local Arterials

The traffic diversion to local arterials performance measure was developed to calculate the volume of traffic that uses the arterial instead of the freeway system due to congestion or lack of freeway connectivity. In a regional transportation system, it is preferable that most of the vehicular travel occur on the freeway system and not on the arterial street network. This is especially true for long-distance trips.

The calculation for the traffic diversion to local arterials performance measure uses model outputs to calculate the VMT on the arterial system in the study area. Because the number and distribution (origins and destinations) of trips are not constant between the alternatives, the change in arterial VMT can also be due to increased travel through the study area. Comparing between alternatives shows the traffic diversion from arterials to the freeway or transit system.

4.1.2.3 Use of Local Arterials for Long Trips

The performance measure to calculate the use of local arterials for long trips captures the percentage of vehicle trips that have both an origin and a destination outside the study area. These trips represent cut-through travel on the arterial system that would be best served by the freeway system. The resulting congestion in the arterial system is partially caused by vehicle trips using arterials for long-distance trips.

The method for developing cut-through travel uses model outputs to calculate the percentage of trips on arterials with an origin and a destination outside the study area in the 4-hour PM peak period. The PM peak period was analyzed because it typically has more congestion than the AM peak period, and thus a greater amount of potential cut-through travel. For the EIR/EIS phase, a technique was developed to split the entire trip table between “study area” trips and “external” trips. Study area trips are defined as having the origin or destination (or both) in the study area. External trips were defined as those that have neither an origin nor a destination in the study area. This technique allowed for a more comprehensive number of facilities to be analyzed. The facilities analyzed are the major north-south facilities in the study area and are illustrated in Figure 4-3.

In the AA phase, four major arterials were selected as heavily used and representative of north-south and east-west travel in the study area. The four major arterials used for analysis in the AA phase are Huntington Drive east of Fremont Avenue, Monterey Road south of SR 110, Fremont Avenue south of Huntington Drive, and Rosemead Boulevard south of Huntington Drive.

The facilities used for the cut-through travel calculation for the EIR/EIS were:

- Eagle Rock Boulevard south of Fletcher Drive
- Figueroa Street south Meridian Street
- Avenue 64 south of Meridian Street
- Orange Grove Avenue south of Arroyo Seco Parkway
- Fremont Avenue south of Arroyo Seco Parkway
- Fair Oaks Avenue south of Arroyo Seco Parkway
- Los Robles Avenue north of Mission Street
- San Marino Avenue south of Huntington Avenue
- Del Mar Avenue south of Huntington Avenue
- San Gabriel Boulevard north of Longden Avenue
- Rosemead Boulevard north of Longden Avenue
- Temple City Boulevard north of Longden Avenue
- Santa Anita Avenue north of Longden Avenue
- Myrtle Avenue north of Longden Avenue

4.1.2.4 Travel Time Improvement

This performance measure was designed to analyze the number of regional trips in the No Build Alternative that would have positive travel time benefits compared to the build alternatives. These trips do not necessarily use the transportation facilities in the build alternative, but benefit from reduced congestion. This performance measure was calculated by comparing the difference in the drive-alone travel time skims and summing the base trip table with trips that had a travel time savings of more than 2.5 minutes. The reported measure is the number of trips with a travel time savings of more than 2.5 minutes. The time limit of 2.5 minutes was selected for this performance measure because it was considered a noticeable improvement, and not considered “noise” in the travel model process.

4.1.3 Transit Performance Measures

4.1.3.1 New Transit Trips

A new transit rider is defined as a person who elects to use transit services, who would have otherwise used a different mode for travel (most likely a personal vehicle). An increase in new transit ridership could be the result of multiple factors, including increases in transit service, reduced transfer times, or new services that are available. New transit ridership was calculated as the change in daily linked transit trips compared with the No Build Alternative.

4.1.3.2 Transit Mode Share

Transit mode share was determined as a ratio of transit trips to total person trips. A higher mode share for transit indicates an increase in transit trips and transit ridership. Transit mode share was calculated for daily trips within the study area, as an indicator of how attractive the transit system is compared to other modes of travel.

4.1.3.3 North-South Transit Throughput

This measure represents the total volume of transit person trips across an east-west screenline (Figure 4-1). Calculating this measure as the total volume of transit person trips, the same way as the highway measure, was possible because the SCAG travel demand model uses TransCAD software. The Metro model (developed in TRANPLAN) was used for the AA phase, and was calculated as the total boardings on transit routes crossing the screenline. The transit throughput performance measure reported in the EIR/EIS was measured as transit passengers (daily person trips) on the transit routes that cross the east-west screenline.

4.1.3.4 Transit Accessibility

Improvements in transit service can be assessed with an increase in transit accessibility. Transit accessibility was measured as the percentage of the study area population and employment located within 0.25 mile of a transit stop with high-frequency service (peak headways less than 15 minutes). The calculations for population and employment are calculated independently, and the average of the two was reported as the transit accessibility percentage.

4.1.4 Other Performance Measures from the AA Phase

Selected performance measures from the AA phase were not carried through to the EIR/EIS phase. Some measures related to traffic operations could be evaluated more precisely using the *Highway Capacity Manual* (HCM) (Transportation Research Board [TRB], 2010) for LOS analysis. These traffic operation methods provide more detail and precision than demand forecasting model output. The AA phase performance measures that were replaced with traffic operations/LOS measures include:

- Directional miles of facilities at LOS F1, F2, F3 in study area
- Directional miles of facilities at LOS E or F1 in study area
- Percentage of intersections with congested approaches in the PM period

Other measures were removed because they did not provide useful information for quantifying the transportation effects of the alternatives or were replaced by new measures to quantify the effect to the same transportation need:

- The AA phase version of the travel time improvement performance measure was the point-to-point travel time from nine selected locations. This performance measure was replaced by the number of trips that are 2.5 minutes faster than the No Build Alternative. The new measure comprises all trips in the region that are affected by the alternatives, not just nine representative origin-destination (O-D) pairs. It is also based on the number of trips as opposed to simply an average of the selected O-D pairs.
- Travel time reliability was measured by the percent of travel on facilities in the study area with dedicated or managed lanes. This measure was inconclusive and did not add value to quantifying the transportation effects of the alternatives, so it was dropped.

- The mobility and connectivity measure that counted the number of new interchanges and new transit transfer points was also dropped from the performance measures. This performance measure failed to represent the benefit of the connections. The simple presence of the connections does not indicate improved mobility or connectivity.
- The number of jobs available within 25.3 minutes of select locations by transit was dropped from the process due to model constraints with the 2012 RTP model. The model station choice and path-building process are inside the mode choice model. The model creates, but does not retain, transit “skims” to allow for the development of the list of zones that meet the criteria.

4.2 Existing Year (2012)

The existing year model was calibrated and validated to existing conditions data, and performance measure data were extracted.

4.2.1 System Performance

Table 4-1 is a summary of system performance measures for the existing conditions. The table provides data on the total VMT and VHT for the study area and the region. The table also shows total person throughput across the east-west screenline through the study area and employment accessibility.

TABLE 4-1
Existing Year System Performance
SR 710 North Study, Los Angeles County, California

Performance Measure	Description	Existing Year (2012)
Total Vehicular Travel Distance	Daily VMT in the study area (in 1,000s)	24,150 miles
	AM and PM peak period VMT in the study area (in 1,000s)	9,980 miles
	Daily VMT in the region(in 1,000s)	391,890 miles
	AM and PM peak period VMT in the region (in 1,000s)	160,910 miles
Total Vehicular Travel Time	Daily VHT in the study area (in 1,000s)	660 hours
	AM and PM peak period VHT in the study area (in 1,000s)	275 hours
	Daily VHT in the region (in 1,000s)	9,740 hours
	AM and PM peak period VHT in the region (in 1,000s)	4,060 hours
Daily Person Throughput	The total north-south person travel crossing the east-west screenline in autos and on transit (in 1,000s)	3,029 persons
Employment Accessibility	The number of accessible jobs within 29.4 minutes from 12 origins (in 1,000s)	1,798 jobs

See Section 4.1.1 for a thorough description of the method of calculation for performance measures described in this table.

4.2.2 Highway Performance

Table 4-2 is a summary of highway performance measures for the existing conditions. The table provides data on the volume crossing an east-west screenline through the study area on arterials and freeways, the daily VMT on arterials, and the percent of trips on arterials making long-distance trips. The percentage of trips in the peak periods that are saving more than 2.5 minutes as compared to the No Build Alternative is not represented in this table, because there is no existing No Build Alternative for comparison.

TABLE 4-2
Existing Year Highway Performance
SR 710 North Study, Los Angeles County, California

Performance Measure	Description	Existing Year (2012)
Volume Served	The total north-south vehicular travel crossing the east-west screenline (in 1,000s)	Arterials = 835 vehicles Freeways = 1,036 vehicles
Traffic Diversion to Local Arterials	Daily VMT on the arterial system in the study area (in 1,000s)	7,645 vehicle miles
Use of Local Arterials for Long Trips (cut-through travel)	The percentage of the study area trips with origins and destinations outside of the study area	12.4%
Travel Time Improvement	Total number of trips with a travel time savings of more than 2.5 minutes compared to no build	Not applicable

See Section 4.1.2 for a thorough description of the method of calculation for performance measures described in this table.

4.2.3 Transit Performance

Table 4-3 is a summary of transit performance measures for the existing conditions. The table includes data on the total daily transit ridership, transit mode share, daily north-south person trips crossing the east-west screenline, and transit accessibility.

TABLE 4-3
Existing Year Transit Performance
SR 710 North Study, Los Angeles County, California

Performance Measure	Description	Existing Year (2012)
New Transit Trips	Change in total daily linked transit trips in the SCAG region	Not applicable
Transit Mode Share	Percentage of total daily person trips that use transit	3.5%
North-South Transit Throughput	Total daily north-south person trips crossing the east-west screenline using transit services (in 1,000s)	150 persons
Transit Accessibility	Percentage of study area and population and employment located within ¼ mile of a transit stop with high frequency service	80.8%

See Section 4.1.3 for a thorough description of the method of calculation for performance measures described in this table.

4.3 Opening Year (2020/2025)

In this section, the opening year build alternatives are compared with the opening year No Build Alternative. The alternatives with a toll state the assumed peak period cost of using the facility in 2012 dollars.

4.3.1 System Performance by Alternative

Table 4-4 is a summary of the opening year system performance results by alternative. This table presents the combined AM and PM peak period VMT and VHT for the study area and region. The table also shows total person throughput across the east-west screenline, and employment accessibility. The remainder of this section presents more detailed figures and discussion of these performance measures.

TABLE 4-4
Opening Year System Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build (2020, 2025)	TSM/TDM (2020)	BRT (2020)	LRT (2025)	Freeway Tunnel Alternative (Single-Bore Tunnel) (2025)			Freeway Tunnel Alternative (Dual-Bore Tunnel) (2025)		
					Toll (\$4.00) No Trucks	Toll (\$4.00), Express Bus	No Toll	No Toll, No Trucks	Toll (\$1.00)	
Total Vehicular Travel Distance (miles)										
Daily Study Area VMT (in 1,000s)	24,275 24,560	24,290	24,270							
Combined AM and PM Peak Period Study Area VMT (in 1,000s)	10,025 10,120	10,035	10,025							
Daily Regional VMT (in 1,000s)	422,010 438,440	421,940	421,900							
Combined AM and PM Peak Period Regional VMT (in 1,000s)	172,760 178,530	172,775	172,760							
Total Vehicular Travel Time (hours)										
Daily Study Area VHT (in 1,000s)	667 681	661	661							
Combined AM and PM Peak Period Study Area VHT (in 1,000s)	279 283	277	276							
Daily Regional VHT (in 1,000s)	10,473 10,997	10,458	10,457							
Combined AM and PM Peak Period Regional VHT (in 1,000s)	4,375 4,570	4,368	4,368							
Daily Person Throughput (persons)										
Daily Person Trips on East-West Screenline for Autos and Transit (in 1,000s)	3,090 3,133	3,099	3,101							
Employment Accessibility (jobs)										
Jobs Accessible within 29.4 Minutes (in 1,000s)	1,945 1,980	1,995	1,995							

See Section 4.1.1 for a thorough description of the method of calculation for performance measures described in this table.

Total Vehicular Travel Distance

- ❖ *The total vehicular travel distance is the sum of the AM and PM peak period VMT in the study area and region.*

Daily and combined AM and PM peak period VMT are summarized in Table 4-4. The data are focused on the combination of the AM and PM peak period results, because those periods include the majority of the congestion. Looking at the combination of the AM and PM peak periods focuses the analysis on the more congested hours of the day, as opposed to looking at the combination of traffic in the evening and nighttime periods. Figure 4-4 shows the change in AM and PM peak period in the study area, using two separate axes. The left axis shows the percentage difference from the No Build Alternative for the study area. The right axis shows the absolute value of the change from the No Build Alternative. As expected, the change in VMT is largest in the dual-bore variation of the Freeway Tunnel Alternative. The dual-bore variation provides the most additional capacity and provides the largest differences in mobility.

The changes in the TDM/TSM and transit alternatives provide a slight increase in VMT due to the increased mobility. The overall change in VMT is less than 0.5 percent of the total VMT. As shown in Table 4-4, the single-bore express bus variation of the Freeway Tunnel Alternative has a reduction in VMT, while the other single-bore variations have an increase in VMT. This is due to travelers changing model to the express bus, reducing overall vehicular travel. The change in the study area VMT for the variation of the single-bore Freeway Tunnel Alternative with express bus is less than 1 percent different from the No Build Alternative or any of the single-bore Freeway Tunnel Alternatives.

The change in combined AM and PM peak period study area VMT shows the largest percentage increase for the dual-bore variation of the Freeway Tunnel Alternative. The dual-bore variation increases VMT by 1.8 percent. The single-bore variation increases VMT by approximately 1.0 percent. These changes are directly related to the increases in supply in the study area. The study area VMT changes for the TSM/TDM and transit alternatives are negligible.

Table 4-4 also summarizes the daily and combined AM and PM peak period VMT for the region. Figure 4-5 shows the change in AM and PM peak period in the region using two separate axes. The left axis shows the percentage difference from the No Build Alternative from the regional total. The scale for this axis is consistent with the scale of percentage change from the study area figure (Figure 4-4). The right axis shows the absolute value of the change from the No Build Alternative. Figure 4-5 shows that the changes in regional VMT are negligible when compared to the regional VMT.

Total Vehicular Travel Time

- ❖ *The total vehicular travel time is the sum of the AM and PM peak period VHT in the study area and region. The reported values are the change in VHT as compared to the No Build Alternative.*

Daily and combined AM and PM peak period VHT are summarized in Table 4-4. Figure 4-6 shows the change in peak VHT for the study area; Figure 4-7 shows the peak VHT for the region. Both figures present the differences in alternatives from the No Build Alternative with two axes. The left axis shows the percent difference from the No Build Alternative for each geographic area total. The right axis shows the absolute value of the change from the No Build Alternative. The data are focused on the combination of the AM and PM peak period results, because those periods include the majority of the congestion. Looking at the combination of the AM and PM peak periods focuses the analysis on the more congested hours of the day, as opposed to looking at the combination of traffic in the evening and night-time periods. Figure 4-6 shows the change in peak VHT for the study area.

The study area VHT shows that all the dual-bore variations of the Freeway Tunnel Alternative save approximately the same amount of travel time in the study area. The figures show that the single-bore express bus variation provides the most reduction in VHT. This is consistent with the smaller increase in VMT in the single-bore express bus variation compared to the other single-bore variations. The transit alternatives have a VHT reduction because they move trips from personal vehicles to transit vehicles. The VHT reduction for the freeway tunnel alternatives comes from the increase in the average speed for all vehicles. The TSM/TDM Alternative has a combination of mode changes and highway improvements to marginally improve VHT.

The regional VHT shows that all alternatives and variations reduce VHT in the region by less than 0.2 percent of the total regional VHT. The trivial differences at the regional level are due to changes in distribution, mode choice, time of day processing, and travel paths within the model.

Daily Person Throughput

- ❖ *The daily person throughput performance measure is the total north-south person travel crossing the east-west screenline. Travel in autos and on transit is included.*

Figure 4-8 shows the total person trips crossing the east-west screenline. The dual-bore variation of the Freeway Tunnel Alternative increases the total north-south person throughput. The increase in the single-bore variation's person trip throughput is about half the dual-bore variation's throughput. The TSM/TDM and transit person trips throughput is largely unchanged, although it does increase by approximately 0.3 percent.

Employment Accessibility

- ❖ *Employment accessibility is the number of accessible jobs compared with the No Build Alternative.*

The number of jobs accessible within 29.4 minutes is presented in Figure 4-9. This figure shows that the single-bore variations have the highest increase in job accessibility due to the increase in mobility and speed provided by the tolled tunnel. The dual-bore variations follow closely. The differences in accessibility as a result of the single- and dual-bore variations are related to the increased capacity of the dual-bore tunnels, and are offset by the volume-reducing tolls in the single-bore variations. This measure is not based on the number of trips, rather just on the travel time between selected locations. All build alternatives increase job accessibility, with BRT and TSM/TDM increasing job accessibility over the No Build Alternative the most in the transit alternatives.

4.3.2 Highway Performance by Alternative

Table 4-5 summarizes the highway system performance measures for each alternative. The table presents the opening year forecasts for the daily volume crossing the east-west screenline through the study area on arterials and freeways, the daily VMT on arterials, the percentage of trips on arterials making long-distance trips, and the percentage of trips in the peak periods that are saving more than 2.5 minutes as compared to the No Build Alternative.

TABLE 4-5
Opening Year Highway Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build (2020, 2025)	TSM/TDM (2020)	BRT (2020)	LRT (2025)	Freeway Tunnel Alternative (Single-Bore Tunnel) (2025)			Freeway Tunnel Alternative (Dual-Bore Tunnel) (2025)		
					Toll (\$4.00)	Toll (\$4.00), No Trucks	Toll (\$4.00), Express Bus	No Toll	No Toll, No Trucks	Toll (\$1.00)
Volume Served (vehicles)										
Daily Volume on Arterials Crossing East-West Screenline (in 1,000s)	853 864	864	863	871	822	823	823	773	776	785
Daily Volume on Freeways Crossing East-West Screenline (1,000s)	1,015 1,023	1,013	1,013	1,022	1,095	1,096	1,096	1,164	1,165	1,157
Traffic Diversion to Local Arterials (vehicles)										
Daily Study Area VMT on Arterials (in 1,000s)	7,810 7,945	7,800	7,790	7,945	7,650	7,655	7,655	7,365	7,380	7,425
Use of Local Arterials										
PM Peak Period Percent Cut-Through	14.2% 13.9%	14.3%	14.3%	14.1%	10.4%	10.4%	10.2%	7.3%	7.4%	7.8%
Travel Time Improvement										
Percent of AM and PM Peak Period trips more than 2.5 minutes faster than No Build	0%	0%	0%	0%	10%	11%	12%	5%	7%	8%

See Section 4.1.2 for a thorough description of the method of calculation for performance measures described in this table.

Volume Served

- ❖ *The volume served performance measure is the total north-south vehicular travel crossing the east-west screenline on arterials and freeways. Travel is summarized separately for arterials and freeways.*

Figures 4-10 and 4-11 are summaries of the total volume served. The figures illustrate that the dual-bore variation of the Freeway Tunnel Alternative has the most total vehicles crossing the screenline (increasing the regional mobility) while reducing the volume on arterials (increasing accessibility) and increasing the volume on freeways. The TSM and transit alternatives slightly increase the travel on arterials in the study areas, while the Freeway Tunnel Alternative reduces the traffic on arterials and increases the traffic on freeways.

Traffic Diversion to Local Arterials

- ❖ *The traffic diversion to local arterials performance measure is the change in daily VMT on the arterial system in the study area.*

Figure 4-12 shows that the overall daily VMT on arterials in the study area is reduced as compared to the No Build Alternative. The Freeway Tunnel Alternative variations reduce the total VMT on arterials (increasing accessibility) by moving those trips to freeways. The dual-bore variation has the largest impact on the study area arterial VMT, with the single-bore variation providing a little more than half the impact as the dual-bore changes. The dual-bore low-toll variation of the Freeway Tunnel Alternative does not reduce the arterial VMT as much as the untolled variation. The TSM/TDM and transit alternatives make almost no difference in the study area VMT.

Use of Local Arterials for Long Trips

- ❖ *The performance measure for the use of arterials for long trips is the percentage of the study area trips with origins and destinations outside of the study area. This measure is informally referred to as the percentage of cut-through travel.*

Figure 4-13 shows that the tunnel alternatives reduce the number of long trips using arterials in the study area compared to the No Build Alternative. Consistent with other performance measures, the dual-bore variations show a larger decrease in cut-through traffic than the single-bore variations due to the additional capacity and larger number of vehicles using the dual-bore tunnel versus the single-bore tunnel. The TSM/TDM and transit alternatives have little effect on the percentage of long-distance trips using arterials in the study area as compared to the No Build Alternative. These patterns demonstrate increasing mobility for those trips that have moved to higher functional class facilities while improving the accessibility for local trips.

Travel Time Improvement

- ❖ *The travel time improvement performance measure measures the number of trips with a travel time improvement of more than 2.5 minutes compared with the No Build Alternative. The improvement is reported as the combination of the AM and PM peak-period trips.*

Figure 4-14 shows that the single-bore variation results in the highest percentage of trips through the study area with time savings greater than 2.5 minutes. The single-bore tunnel has a higher percentage of travel time savings for trips in this corridor because the travel time savings do not factor in the cost of tolls, which in the single-bore variations function to keep the tunnel operating at a higher speed than in the untolled and low-toll dual-bore variations. The transit alternatives have little effect on the highway travel time savings. The transit and TSM/TDM alternatives will have an effect on specific markets, but the travel time savings of those markets are small compared to the number of auto trips. The transit alternatives provide little to no changes in highway performance measures as the improvements in specific markets are overwhelmed by the volume of auto trips in the region and study area.

4.3.3 Transit Performance by Alternative

Table 4-6 is a summary of transit performance measures. The table shows that all alternatives increase daily regional transit trips. The TSM/TDM improvements account for almost all the transit trip increases in the tunnel variations, while the BRT and LRT alternatives show additional growth in linked regional transit trips. The results presented in the table are shown graphically in the following sections.

TABLE 4-6
Opening Year Transit Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build (2020, 2025)	TSM/TDM (2020)	BRT (2020)	LRT (2025)	Freeway Tunnel Alternative (Single-Bore Tunnel) (2025)		Freeway Tunnel Alternative (Dual-Bore Tunnel) (2025)			
					Toll (\$4.00), No Trucks	Toll (\$4.00), Express Bus	No Toll	No Toll, No Trucks	Toll (\$1.00)	
New Transit Trips										
Total Daily Linked Transit Trips in the SCAG Region (in 1,000s)	1,650	1,650	1,650	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Change in Total Daily Linked Transit Trips in the SCAG Region	NA	9,450	13,550	13,950	10,550	9,050	10,150	8,800	10,150	9,750
Transit Mode Share										
Study Area Mode Share	3.9%	4.0%	4.1%	4.1%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
North-South Transit Throughput										
Daily Person Trips Crossing East-West Screenline (in 1,000s)	172	175	179	188	187	186	187	185	186	187
Transit Accessibility										
Percent of Study Area Population and Employment within ¼ Mile of High Frequency Service	80.3%	80.3%	80.3%	80.4%	80.3%	80.3%	80.3%	80.3%	80.3%	80.3%

See Section 4.1.3 for a thorough description of the method of calculation for performance measures described in this table.

New Transit Trips

- ❖ *The new transit trips performance measure is the number of new transit ridership compared with the No Build Alternative. The new transit riders are people who elect to use transit services, who would have otherwise used a different mode of travel.*

Figure 4-15 presents the total daily linked transit trips in the SCAG region, and the change in daily linked transit trips compared to the No Build Alternative. This performance measure captures only new linked trips, not trips that are moving from another transit mode. On a regional level, there is virtually no change (a maximum of 0.8 percent for the LRT alternative) in new transit trips for all alternatives. The LRT and BRT alternatives increase the number of linked transit trips more than any other alternative. The single-bore express bus variation of the Freeway Tunnel Alternative has increased link transit trips that are in line with the single- and dual-bore variations. The express bus variation is likely drawing its ridership from existing transit trips, so these transit riders are generally not reflected in this measure.

Transit Mode Share

- ❖ *The transit mode share performance measure is the percentage of total daily person trips that use transit.*

The daily transit mode share within the study area is presented in Figure 4-16. None of the alternatives drastically alter the study area transit mode share. Many of the transit users on the LRT and BRT alternatives come from

other transit modes. The tunnel gains are largely based on the TSM/TDM improvements that are carried into the Freeway Tunnel Alternative.

North-South Transit Throughput

- ❖ *The north-south transit throughput performance measure is the total north-south person trips crossing the east-west screenline using transit services.*

The north-south transit throughput summary in Figure 4-17 shows that LRT and BRT alternatives have the largest effect on person trips. The daily transit person trips crossing the east-west screenline show that the Freeway Tunnel Alternative increases transit a little more than the TSM/TDM Alternative alone, mostly due to the change in travel patterns in the region caused by the existence of the freeway tunnel. Another possible reason for an increase in transit throughput for the Freeway Tunnel Alternative could be that an increase in bus speeds on transit routes results in a reduction in arterial congestion, thus attracting transit riders to an improved transit service.

Transit Accessibility

- ❖ *The transit accessibility performance measure is the average percentage of the study area and population that is located within 0.25 mile of a transit stop with high-frequency service (peak headways less than 15 minutes).*

The transit accessibility for all alternatives remains identical to the No Build Alternative for all alternatives except the transit alternatives. Figure 4-18 shows the improvement in transit accessibility for the LRT Alternative. The BRT Alternative increases accessibility by less than 0.1 percent, and the LRT Alternative increases the accessibility by approximately 0.1 percent. This measure shows that a majority of the study area (more than 80 percent) has access to high-frequency transit service.

4.3.4 Truck Performance by Alternative

Opening Year truck conditions in the study area were analyzed for each Build Alternatives and are summarized in Table 4.7. The performance measure was to calculate the number of truck VMT on freeways and arterials, summarized by lane miles. Comparing freeway and arterial truck traffic shows the changes in pattern for truck trips. Calculating truck VMT per lane mile shows the intensity of truck travel.

The truck VMT for the TSM/TDM, BRT, and LRT Alternatives is within 1 percent of the No Build Alternative for freeways, and within 3 percent of the No Build Alternative for arterials and collectors. The truck intensity for the TSM/TDM, BRT, and LRT Alternatives is the same as the No Build Alternative.

Truck VMT on freeways decreases slightly (up to 2 percent) for freeway tunnel alternative design variations that do not allow trucks, and increases (up to 3 percent) for other design variations. Truck VMT on arterials either remains the same, or decreases (up to 9 percent) for the freeway tunnel alternatives, depending on design variation. For the Freeway Tunnel Alternative, the arterial system truck intensity decreases (up to 9 percent), and the freeway system truck intensity is either the same as or lower than the No Build Alternative, depending on the design variation.

TABLE 4-7
Opening Year (2020/2025) Truck Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	Opening Year 2020					Opening Year 2025					
	No Build	TSM/ TDM	BRT	No Build	LRT	Freeway Tunnel Alternative					
						Single-Bore Variation			Dual-Bore Variation		
						Toll	Toll, No Trucks	Toll, Express Bus	No Toll	No Toll, No Trucks	Toll
Daily Truck Travel in the Study Area											
Daily Truck VMT on Freeways (in 1,000s)	1,275	1,275	1,280	1,410	1,405	1,450	1,395	1,455	1,450	1,390	1,445
Daily Truck VMT on Arterials and Collectors (in 1,000s)	165	165	165	170	175	160	170	160	155	170	155
Daily Truck VMT per Lane Mile of Freeway	2,300	2,300	2,300	2,500	2,500	2,500	2,400	2,500	2,500	2,400	2,400
Daily Truck VMT per Lane Mile of Arterials and Collectors	100	100	100	105	105	95	105	95	95	100	95

Trucks included in this table refer to heavy-duty trucks as defined in the SCAG 2012 RTP travel demand model.

4.4 Horizon Year (2035)

In this section, the horizon year build alternatives are compared with the horizon year No Build Alternative. The alternatives with a toll state the assumed peak period cost of using the facility in 2012 dollars.

Comparisons between the opening year and horizon year results need to be conducted with the understanding that the growth in the region is not uniform. Changes in the socioeconomic growth and characteristics and the transportation network affect the trip-making patterns and mode-choice patterns in the region. The model consists of a feedback process to inform the trips distribution and time-of-day phases of the model with information on congestion levels. This feedback process changes the number of trips, pattern of trips, and time-of-day in which the trips occur. These changes result in differences in performance measures that are not always consistent with the opening year results.

4.4.1 System Performance by Alternative

Table 4-8 is a summary of the horizon year system performance results by alternative. This table presents the combined AM and PM peak period VMT and VHT for the study area and region. The table also shows total person throughput across an east-west screenline through the study area and employment accessibility. The remainder of this section presents more detailed figures about these performance measures.

TABLE 4-8
Horizon Year System Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build	TSM/ TDM	BRT	LRT	Freeway Tunnel Alternative (Single-Bore Tunnel)			Freeway Tunnel Alternative (Dual-Bore Tunnel)		
					Toll (\$4.00)	Toll (\$4.00), No Trucks	Toll (\$4.00), Express Bus	No Toll	No Toll, No Trucks	Toll (\$1.00)
Total Vehicular Travel Distance (miles)										
Daily Study Area VMT (in 1,000s)	25,120	25,190	25,170	25,160	25,300	25,320	25,300	25,520	25,580	25,530
Combined AM and PM Peak Period Study Area VMT (in 1,000s)	10,320	10,350	10,340	10,345	10,425	10,415	10,430	10,520	10,530	10,520
Daily Regional VMT (in 1,000s)	471,435	471,485	471,450	471,320	471,560	471,730	471,530	471,950	471,780	471,820
Combined AM and PM Peak Period Regional VMT (in 1,000s)	190,110	190,140	190,120	190,175	190,270	190,195	190,275	190,435	190,325	190,360
Total Vehicular Travel Time (hours)										
Daily Study Area VHT (in 1,000s)	706	702	702	706	689	691	689	684	684	684
Combined AM and PM Peak Period Study Area VHT (in 1,000s)	291	290	290	292	287	287	287	284	284	284
Daily Regional VHT (in 1,000s)	12,107	12,106	12,103	12,118	12,082	12,110	12,086	12,088	12,074	12,081
Combined AM and PM Peak Period Regional VHT (in 1,000s)	4,985	4,985	4,984	4,999	4,984	4,991	4,985	4,984	4,978	4,981
Daily Person Throughput (persons)										
Daily Person Trips on East-West Screenline for Autos and Transit (in 1,000s)	3,210	3,218	3,225	3,223	3,263	3,259	3,263	3,298	3,299	3,298
Employment Accessibility (jobs)										
Jobs Accessible within 29.4 Minutes (in 1,000s)	2,028	2,052	2,049	2,040	2,094	2,091	2,092	2,069	2,076	2,087

See Section 4.1.1 for a thorough description of the method of calculation for performance measures described in this table.

Total Vehicular Travel Distance

- ❖ *The total vehicular travel distance is the sum of the AM and PM peak period VMT in the study area and region. The reported values are the change in VMT as compared to the No Build Alternative.*

Table 4-8 summarizes the daily and combined AM and PM peak period VMT in the study area and region. The data are focused on the combination of the AM and PM peak period results, because those periods include the majority of the congestion. Looking at the combination of the AM and PM peak periods focuses the analysis on the more congested hours of the day, as opposed to looking at the traffic in the evening and night-time periods. Figure 4-19 shows the change in AM and PM peak period VMT in the study area. The figure presents the differences in alternatives from the No Build Alternative with two axes. The left axis shows the percentage difference from the No Build Alternative for the study area VMT. The right axis shows the absolute value of the change from the No Build Alternative VMT. The change in VMT is largest in the dual-bore variations of the Freeway Tunnel Alternative. The dual-bore variations provide the most additional capacity and provide the largest differences in mobility. The changes in the TDM/TSM and transit alternatives provide a slight increase in VMT due to the increased mobility, but are virtually zero in all geographies. The changes caused by some alternatives can be traced to the change in distribution of trips from the No Build Alternative as additional capacity and mobility options are available. The larger the change in supply, the larger the shift in regional VMT

AM and PM peak period study area VMT shows the largest percent increase in VMT in the dual-bore variations of the Freeway Tunnel Alternative. These variations increase the VMT by approximately 2 percent. The single-bore variations increase the VMT by approximately 1.0 percent. These changes are consistent with the increases in supply in the study area. The study area VMT changes for the TSM/TDM and transit alternatives are negligible.

Figure 4-20 presents the regional VMT differences compared to the No Build Alternative. The figure shows the differences in alternatives from the No Build Alternative with two axes. The left axis shows the percent difference from the No Build Alternative for the regional VMT. The right axis shows the absolute value of the change from the No Build Alternative VMT. The figure shows similar results for the region as was presented for the study area. The largest difference in VMT occurs in the dual-bore variations of the Freeway Tunnel Alternative. The VMT difference between the No Build Alternative and the transit and TSM/TDM Alternatives is virtually zero. The increases within the region are negligible. The increase for the dual-bore variations of the Freeway Tunnel Alternative represent less than a 0.2 percent increase of the regional VMT.

Total Vehicular Travel Time

- ❖ *The total vehicular travel time is the sum of the AM and PM peak period VHT in the study area and region. The reported values are the change in VHT as compared to the No Build Alternative.*

Daily and combined AM and PM peak period VHT are summarized in Table 4-8. The data are focused on the combination of the AM and PM peak period results, because those periods include the majority of the congestion. Looking at the combination of the AM and PM peak periods focuses the analysis on the more congested hours of the day, as opposed to looking at the traffic in the evening and nighttime periods. Figure 4-21 shows the change in peak VHT for the study area. The figure presents the differences in alternatives from the No Build Alternative with two axes. The left axis shows the percentage difference from the No Build Alternative for the study area VHT. The right axis shows the absolute value of the change from the No Build Alternative study area VHT. These data illustrate the effect of major infrastructure projects on the trip distribution and congestion pricing time-of-day models within the regional model. The study area VHT is consistent, with the dual-bore variation accounting for a 2.5 percent decrease in peak period VHT in the study area. The single-bore variations have a 1.4 percent decrease in peak period study area VHT. The TSM/TDM and transit alternatives have virtually no effect on the study area VHT. The calculation of average speed (VMT/VHT) shows the average speed increasing the most for dual-bore variations of the Freeway Tunnel Alternative, followed by the single-bore variations.

Figure 4-22 shows the change in peak VHT for the region. The figure presents the differences in alternatives from the No Build Alternative with two axes. The left axis shows the percentage difference from the No Build Alternative for the regional VHT. The right axis shows the absolute value of the change from the No Build Alternative regional VHT. The trivial differences at the regional level are due to changes in distribution,

mode choice, time of day processing, and travel paths within the model, and vary by alternative. The largest change in regional VHT is less than 0.3 percent from the No Build Alternative VHT.

Daily Person Throughput

- ❖ *The daily person throughput performance measure is the total north-south person travel crossing the east-west screenline. Travel in autos and on transit is included.*

Figure 4-23 summarizes the total person trips crossing the east-west screenline. The dual-bore variations of the Freeway Tunnel Alternative increase the total north-south person throughput across the screenline. The increase in the person trip throughput of the single-bore variations is about half the throughput of the dual-bore variations. The TSM/TDM and transit person trips throughput is largely unchanged.

Employment Accessibility

- ❖ *The employment accessibility is the number of accessible jobs compared with the No Build Alternative.*

Figure 4-24 summarizes the number of jobs accessible within 29.4 minutes. The increases in job accessibility are between 20,000 and 65,000 jobs compared to the No Build Alternative. The single-bore variations of the Freeway Tunnel Alternative show the highest increase in job accessibility due to the increase in mobility and speed provided by the tolled tunnel. The dual-bore variations follow closely. The differences in the single- and dual-bore freeway tunnel accessibility are consistent with the finding that the increased capacity of the dual-bore tunnels is offset by the volume-reducing tolls in the single-bore variations. This measure is not based on the number of trips but rather on the travel time between selected locations. All build alternatives increase the job accessibility, with the BRT Alternative increasing job accessibility slightly more than the LRT Alternative.

4.4.2 Highway Performance by Alternative

Table 4-9 shows the highway system performance measures for each alternative. The table presents the horizon year daily forecasts for the volume crossing an east-west screenline through the study area on arterials and freeways, the daily VMT on arterials, the percentage of trips on arterials making long-distance trips, and the percentage of trips in the peak periods that are saving more than 2.5 minutes as compared to the No Build Alternative.

Volume Served

- ❖ *The volume served performance measure is the total north-south vehicular travel crossing the east-west screenline on arterials and freeways. Travel is summarized separately for arterials and freeways.*

Figures 4-25 and 4-26 show that the TSM and transit alternatives slightly increase the travel on arterials in the study areas while the Freeway Tunnel Alternative reduces the traffic on arterials and increases the traffic on freeways. This pattern is expected, as the additional capacity provided by the single-bore and dual-bore variations of the Freeway Tunnel Alternative is freeway capacity. The dual-bore tunnel has the most total vehicles crossing the screenline (increasing the regional mobility) while reducing the volume on arterials (increasing accessibility) and increasing the volume on freeways.

Traffic Diversion to Local Arterials

- ❖ *The traffic diversion to local arterials performance measure is the change in daily VMT on the arterial system in the study area.*

Figure 4-27 shows that the overall daily VMT on arterials in the study area is reduced as compared to the No Build Alternative. The Freeway Tunnel Alternative variations reduce the total VMT on arterials (increasing accessibility) by moving those trips to freeways. The dual-bore variation has the largest impact on the study area arterial VMT with the single-bore variations of the Freeway Tunnel Alternative providing a little more than half the impact as the dual-bore changes. The dual-bore low-toll variation does not reduce the arterial VMT as much as the untolled variation. The TSM/TDM and transit alternatives make almost no difference in the study area VMT.

TABLE 4-9
Horizon Year Highway Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build	TSM/ TDM	BRT	LRT	Freeway Tunnel Alternative (Single-Bore Tunnel)		Freeway Tunnel Alternative (Dual-Bore Tunnel)			
					Toll (\$4.00) No Trucks	Toll (\$4.00), Express Bus	No Toll, No Trucks	Toll (\$1.00)		
Volume Served (vehicles)										
Daily Volume on Arterials Crossing East-West Screenline (in 1,000s)	881	890	891	890	839	836	837	790	794	800
Daily Volume on Freeways Crossing East-West Screenline (1,000s)	1,042	1,039	1,039	1,040	1,117	1,118	1,118	1,186	1,184	1,178
Traffic Diversion to Local Arterials (vehicles)										
Daily Study Area VMT on Arterials (in 1,000s)	8,180	8,180	8,170	8,220	7,900	7,890	7,895	7,600	7,610	7,655
Use of Local Arterials										
PM Peak Period Percent Cut-Through	13.7%	14.3%	14.2%	14.0%	10.3%	10.6%	10.3%	7.3%	7.4%	7.8%
Travel Time Improvement										
Percent of AM and PM Peak Period trips more than 2.5 minutes faster than No Build	0%	0%	0%	3%	13%	13%	13%	7%	8%	10%

See Section 4.1.2 for a thorough description of the method of calculation for performance measures described in this table.

Use of Local Arterials for Long Trips

- ❖ *The performance measure for the use of arterials for long trips is the percentage of the study area trips with origins and destinations outside the study area. This measure is informally referred to as the percentage of cut-through travel.*

Figure 4-28 shows that the Freeway Tunnel Alternative reduces the number of long trips using arterials in the study area compared to the No Build Alternative. The Freeway Tunnel Alternative reduces the number of longer-distance trips from the arterials, increasing mobility for those trips that have moved to higher-capacity roads like freeways. The Freeway Tunnel Alternative also improves accessibility for local trips. Consistent with other performance measures, the dual-bore variations of the Freeway Tunnel Alternative show a larger decrease in cut-through traffic than the single-bore variations due to the additional capacity. The TSM/TDM and transit alternatives have little effect on the percentage of long-distance trips using arterials in the study area as compared to the No Build Alternative.

Travel Time Improvement

- ❖ *The travel time improvement performance measure measures the number of trips with a travel time improvement of more than 2.5 minutes compared with the No Build Alternative. The improvement is reported as the combination of the AM and PM peak period trips.*

Figure 4-29 shows that the single-bore variation results in the highest percentage of trips through the capture area with time savings greater than 2.5 minutes. The Freeway Tunnel Alternative provides direct benefit to highway travel time savings by adding direct and indirect capacity for many trips. The single-bore variation has a higher percentage of travel time savings for trips in this corridor because the travel time savings do not factor in the cost of tolls, which in the single-bore variations function to keep the tunnel operating at a higher speed than the untolled and low-toll dual-bore variations. The transit alternatives have little effect on the highway travel time savings. The transit and TSM/TDM alternatives will have an effect on specific markets, but these travel time savings of those markets are small compared to the number of auto trips in the corridor.

4.4.3 Transit Performance by Alternative

Table 4-10 is a summary of transit performance measures. The results presented in the table are shown graphically in the following section.

TABLE 4-10
Horizon Year Transit Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build	TSM/ TDM	BRT	LRT	Freeway Tunnel Alternative (Single-Bore Tunnel)		Freeway Tunnel Alternative (Dual-Bore Tunnel)			
					Toll (\$4.00) No Trucks	Toll (\$4.00), Express Bus	No Toll	No Toll, No Trucks	Toll (\$1.00)	
New Transit Trips										
Total Daily Linked Transit Trips in the SCAG Region (in 1,000s)	1,850	1,850	1,850	1,850	1,850	1,850	1,850	1,850	1,850	1,850
Change in Total Daily Linked Transit Trips in the SCAG Region	NA	11,250	13,500	15,350	11,350	8,350	10,650	7,900	10,900	10,300
Transit Mode Share										
Study Area Mode Share	4.2%	4.2%	4.3%	4.3%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
North-South Transit Throughput										
Daily Person Trips Crossing East-West Screenline	209	211	215	214	213	211	212	211	212	212
Transit Accessibility										
Percent of Study Area Population and Employment within 0.25 Mile of High-Frequency Service	80.6%	80.6%	80.6%	80.7%	80.6%	80.6%	80.6%	80.6%	80.6%	80.6%

See Section 4.1.3 for a thorough description of the method of calculation for performance measures described in this table.

New Transit Trips

- ❖ *The new transit trips performance measure is the number of new transit ridership compared with the No Build Alternative. The new transit riders are people who elect to use transit services, who would have otherwise used a different mode of travel.*

Figure 4-30 presents the total daily linked transit trips in the SCAG region, and the change in daily linked transit trips compared to the No Build Alternative. This performance measure captures only new linked trips, not trips that are moving from another transit mode. On a regional level, there is virtually no change (a maximum of

0.8 percent for the LRT alternative) in new transit trips for all alternatives. All alternatives increase daily regional transit trips. The TSM/TDM improvements account for almost all the transit trip increases in the Freeway Tunnel Alternative, while the BRT and LRT alternatives show additional growth in linked regional transit trips. The single-bore with express bus variation does not increase new linked transit trips to the same level as the single-bore variation. The express bus variation is likely drawing its ridership from existing transit trips, so they are not being counted in this measure.

Transit Mode Share

- ❖ *The transit mode share performance is the percentage of total daily person trips that use transit.*

The daily mode share within the study area is presented in Figure 4-31. None of the alternatives drastically alter the study area mode share. Many of the transit users on the LRT and BRT alternatives come from other transit modes. The BRT and LRT alternatives have slightly higher study area mode shares.

North-South Transit Throughput

- ❖ *The north-south transit throughput performance measure is the total north-south person trips crossing the east-west screenline using transit services.*

Similar to the new transit trips, the north-south transit throughput data in Figure 4-32 shows that LRT and BRT alternatives have the largest effect on person trips. The changes in transit throughput for the Freeway Tunnel Alternative is largely based on the TSM/TDM improvements. The consistency in these forecasts shows that the differences noted in the new transit trips is caused by fluctuations in the trip distribution, moving trips into and out of specific markets causing the model to be more sensitive to changes. The north-south transit throughput shows that the markets in the corridor are not as sensitive as other travel markets and that many of the transit trips on the new services are diverted from existing transit trips.

Transit Accessibility

- ❖ *The transit accessibility performance measure is the average percentage of the study area and population that is located within 0.25 mile of a transit stop with high-frequency service (peak headways less than 15 minutes).*

The transit accessibility for all alternatives remains identical to the No Build for all alternatives except the transit alternatives. Figure 4-33 shows the improvement in transit accessibility for the LRT Alternative. The BRT Alternative increases accessibility by less than 0.1 percent, and the LRT Alternative increases the accessibility by approximately 0.1 percent. This measure shows that a majority of the study area (more than 80 percent) has access to high-frequency transit service.

4.4.4 Truck Performance by Alternative

Horizon Year truck conditions in the study area were analyzed for each of the Build Alternatives and are summarized in Table 4.11. The performance measure was to calculate the number of truck VMT on freeways and arterials, summarized by lane miles. Comparing freeway and arterial truck traffic shows the changes in pattern for truck trips. Calculating truck VMT per lane mile shows the intensity of truck travel.

The truck VMT for the TSM/TDM, BRT, and LRT Alternatives is within 1 percent of the No Build Alternative for freeways, and within 3 percent of the No Build Alternative for arterials and collectors. The truck VMT for the TSM/TDM, BRT, and LRT Alternatives is the same as the No Build Alternative.

Truck VMT on freeways decreases slightly (1 percent) for the single-bore without trucks variation of the freeway tunnel alternative, and increases (up to 6 percent) for other design variations. Truck VMT on arterials either remains the same, or decreases (up to 15 percent) for the freeway tunnel alternatives, depending on design variation. For the Freeway Tunnel Alternative, the arterial system truck intensity generally decreases (up to 17 percent), and the freeway system truck intensity is either the same as or lower than the No Build Alternative, depending on the design variation.

TABLE 4-11
Horizon Year (2035) Truck Performance by Alternative
SR 710 North Study, Los Angeles County, California

Performance Measure	No Build	TSM/ TDM	BRT	LRT	Freeway Tunnel Alternative					
					Single-Bore Variation			Dual-Bore Variation		
					Toll	Toll, No Trucks	Toll, Express Bus	No Toll	No Toll, No Trucks	Toll
Daily Truck Travel in the Study Area										
Daily Truck VMT per Lane Mile of Freeway	1,665	1,665	1,670	1,660	1,725	1,655	1,725	1,65	1,690	1,715
Daily Truck VMT per Lane Mile of Arterials and Collectors	190	190	195	195	175	190	175	160	170	175
Daily Truck VMT per Lane Mile of Freeway	2,800	2,800	2,800	2,800	2,800	2,700	2,800	2,700	2,600	2,700
Daily Truck VMT per Lane Mile of Arterials and Collectors	115	115	115	115	105	115	105	95	105	105

Trucks included in this table refer to heavy-duty trucks as defined in the SCAG 2012 RTP travel demand model.

4.4.5 Comparison with I-710 South Forecasts

Model Forecasts. Throughout the analysis efforts, regional model forecast volumes were compared between the forecasts developed for the I-710 South and SR 710 North projects. Five locations along I-710 were used for comparison, including one location at the SR 710 tunnel between I-10 and I-210. Table 4-12 is a summary of the comparison, which indicates a close match between the total vehicular traffic (3 to 13 percent).

The greatest difference between the two models is related to trucks. The comparison of truck volumes at each of the locations shows very little difference between the two models when compared with overall traffic. The I-710 South model does predict a slightly lower truck volume than the SR 710 North model, and that is primarily due to the differences in the port and domestic intermodal truck models described previously.

TABLE 4-12
Travel Model Comparison Summary: SR 710 North and I-710 South
SR 710 North Study, Los Angeles County, California

Location	SR 710 North Model (2035) ¹			I-710 South Model (2035) ¹			Comparison	
	Daily			Daily			Daily	
	Total	Trucks	% Trucks	Total	Trucks	% Trucks	% Diff	% Truck Diff
SR 710 Tunnel	177,600	25,600	14.4%	166,200	18,600	14.7%	-6%	-27%
I-710 North of Floral Drive	220,000	26,500	12.0%	226,900	20,300	14.7%	3%	-23%
I-710 North of Whittier Boulevard	265,800	37,000	13.9%	256,400	27,300	14.7%	-4%	-26%
I-710 North of Washington Boulevard	315,700	31,400	9.9%	274,700	30,200	14.7%	-13%	-4%
I-710 South of Imperial Highway	272,100	37,500	13.8%	249,900	36,700	14.7%	-8%	-2%

¹ The model results shown for 2035 for both SR 710 North and I-710 South include the SR 710 North tunnel and the I-710 South truck lanes. Both models assumed the SR 710 tunnel was designed as the dual-bore tunnel without a toll variation.

4.5 Summary/Highlights of Travel Forecasting Results

Overall, the forecasts show an increased mobility for all alternatives over the No Build Alternative, while the opening year and horizon year results generally follow the same patterns. The travel forecasting results show that the alternatives with the largest change in transportation supply (capacity) show the largest benefit in regional mobility and accessibility. There are some outliers in the performance measures for some of the alternatives, but generally the majority of the evidence creates a consistent assessment of the alternatives. Comparisons between

the opening year and horizon year results need to be conducted with the understanding that the growth in the region is not uniform. Changes in the socio-economic growth and characteristics and the transportation network affect the trip-making patterns and mode choice patterns in the region. The model consists of a feedback process to inform the trips distribution and time-of-day phases of the model with information on congestion levels. This feedback process changes the number of trips, pattern of trips, and time-of-day in which the trips occur. These changes result in differences in performance measures that are not always consistent with the opening year results.

The daily person trips crossing the east-west screenline increases for all build alternatives in both the opening and horizon years as is expected when transit and/or highway capacity is added to the transportation system.

The transit alternatives have virtually no effect on highway system performance. The improvements in the transit system provide benefits to the specific markets, but the size of the markets is not big enough to make a large change in the highway performance measures. Similarly, the highway alternatives do not generally affect the transit performance measures.

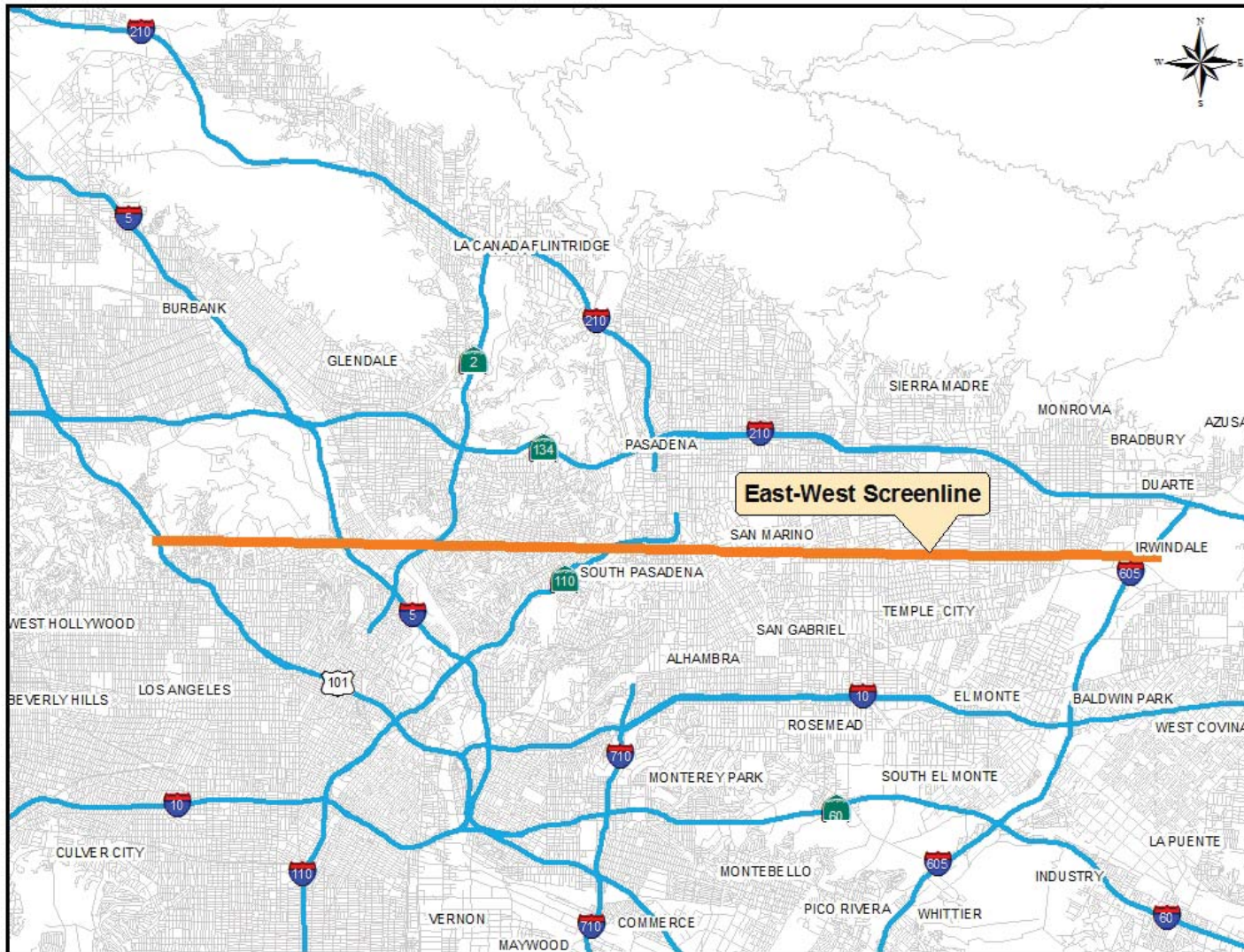


FIGURE 4-1
East-West Screenline
 SR 710 North Study
 Los Angeles County, California

*Note: Screenlines extend completely across the modeled area from boundary cordon to boundary cordon. Screenlines are often associated with physical barriers such as rivers or railroads, although jurisdictional boundaries such as county lines that extend through the study area may also be used as screenlines.
 (Source: The Travel Model Improvement Program Travel Model Validation and Reasonableness Checking Manual Second Edition.)

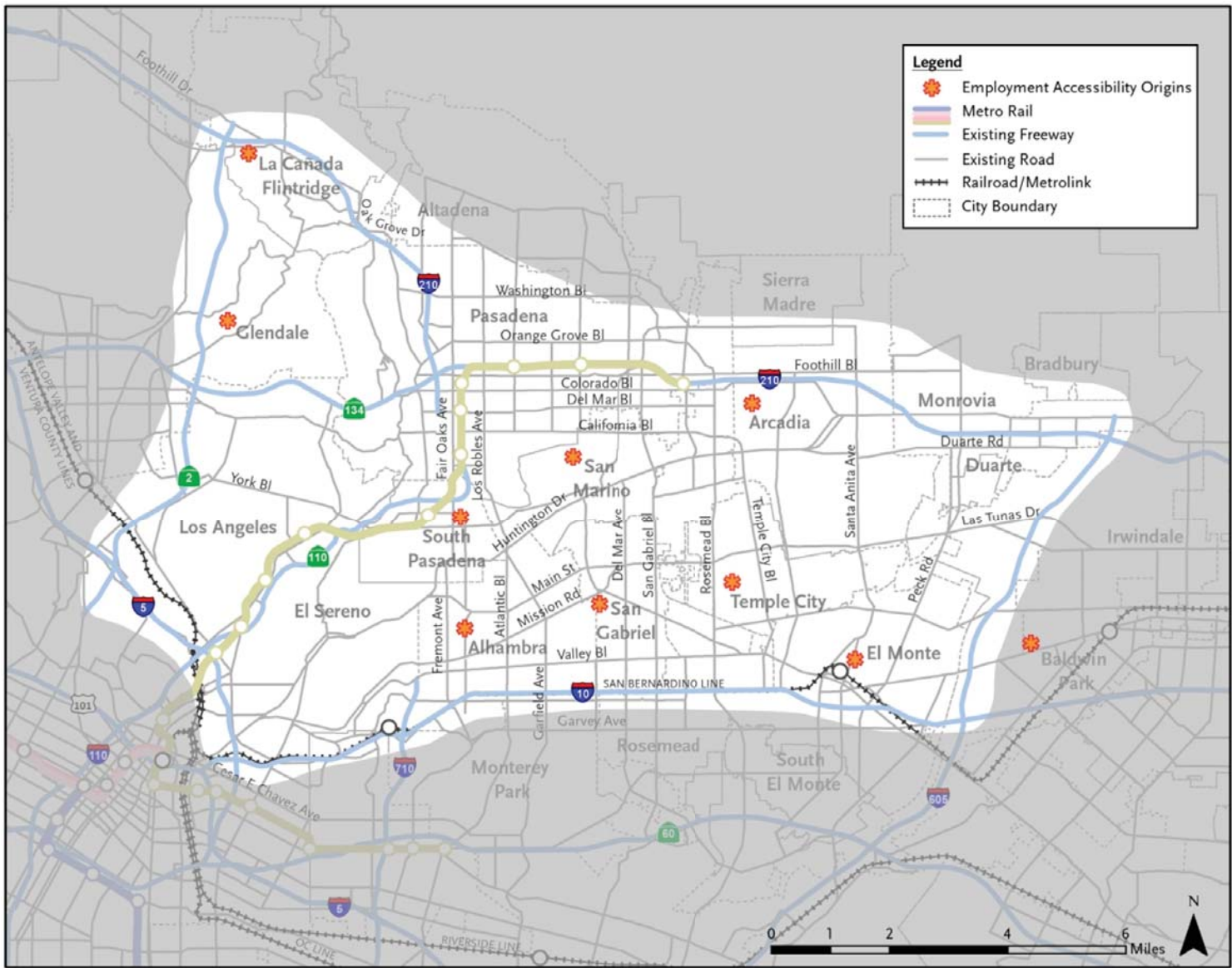


FIGURE 4-2
Employment Accessibility Origins
 SR 710 North Study
 Los Angeles County, California

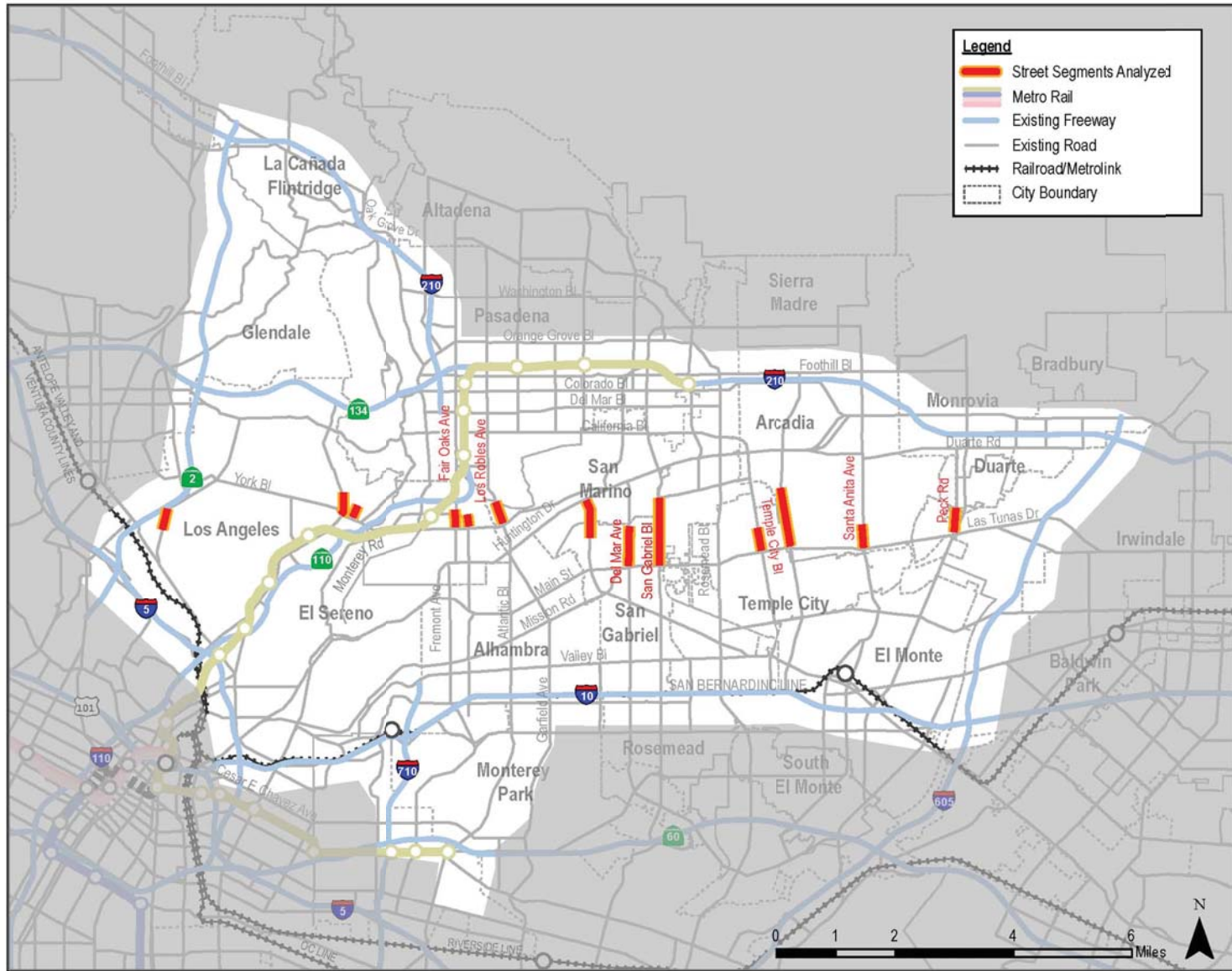


FIGURE 4-3
 Study Area Cut-Through Travel Locations
 SR 710 North Study
 Los Angeles County, California

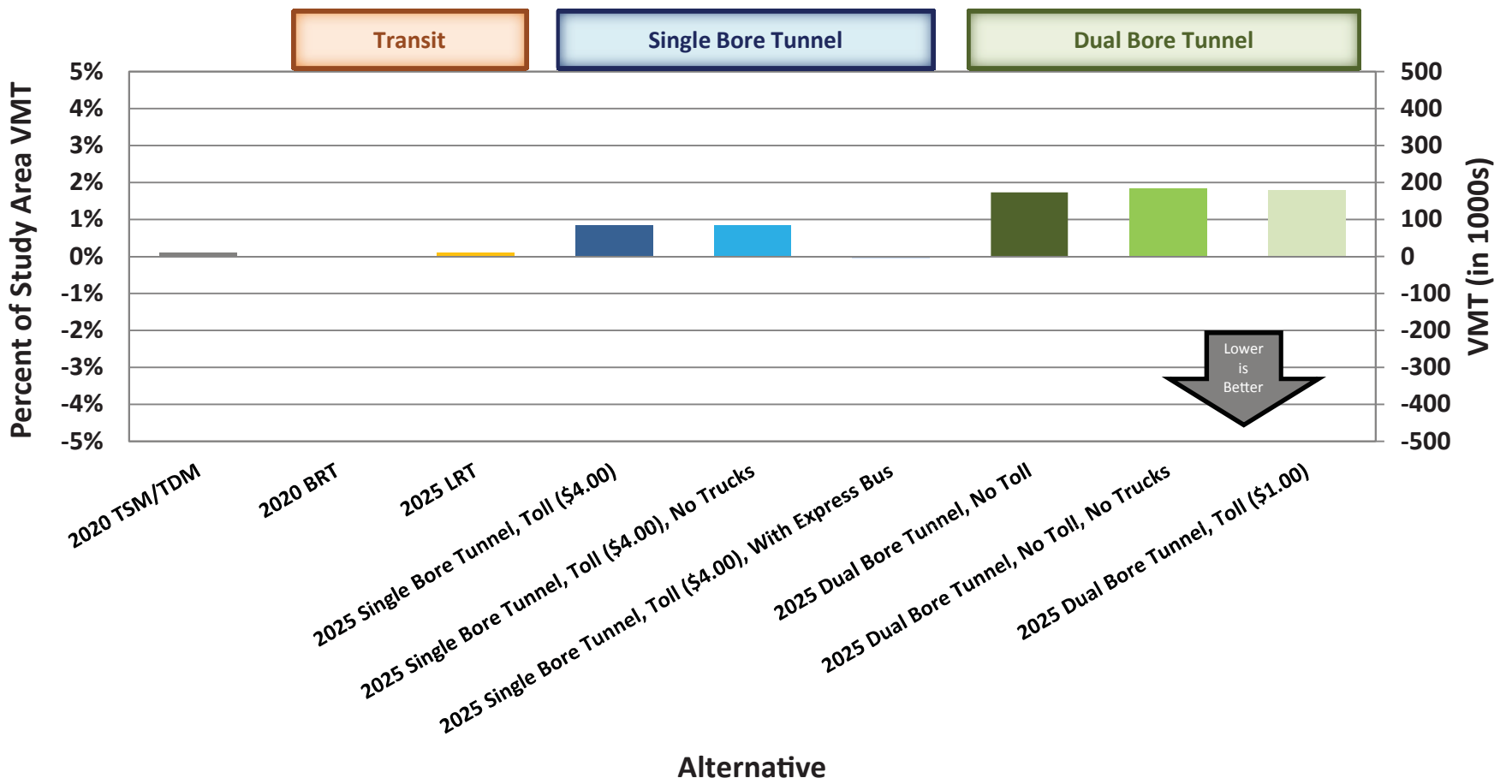


FIGURE 4-4
 Change in Combined AM and PM Peak Period VMT
 in the Study Area - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

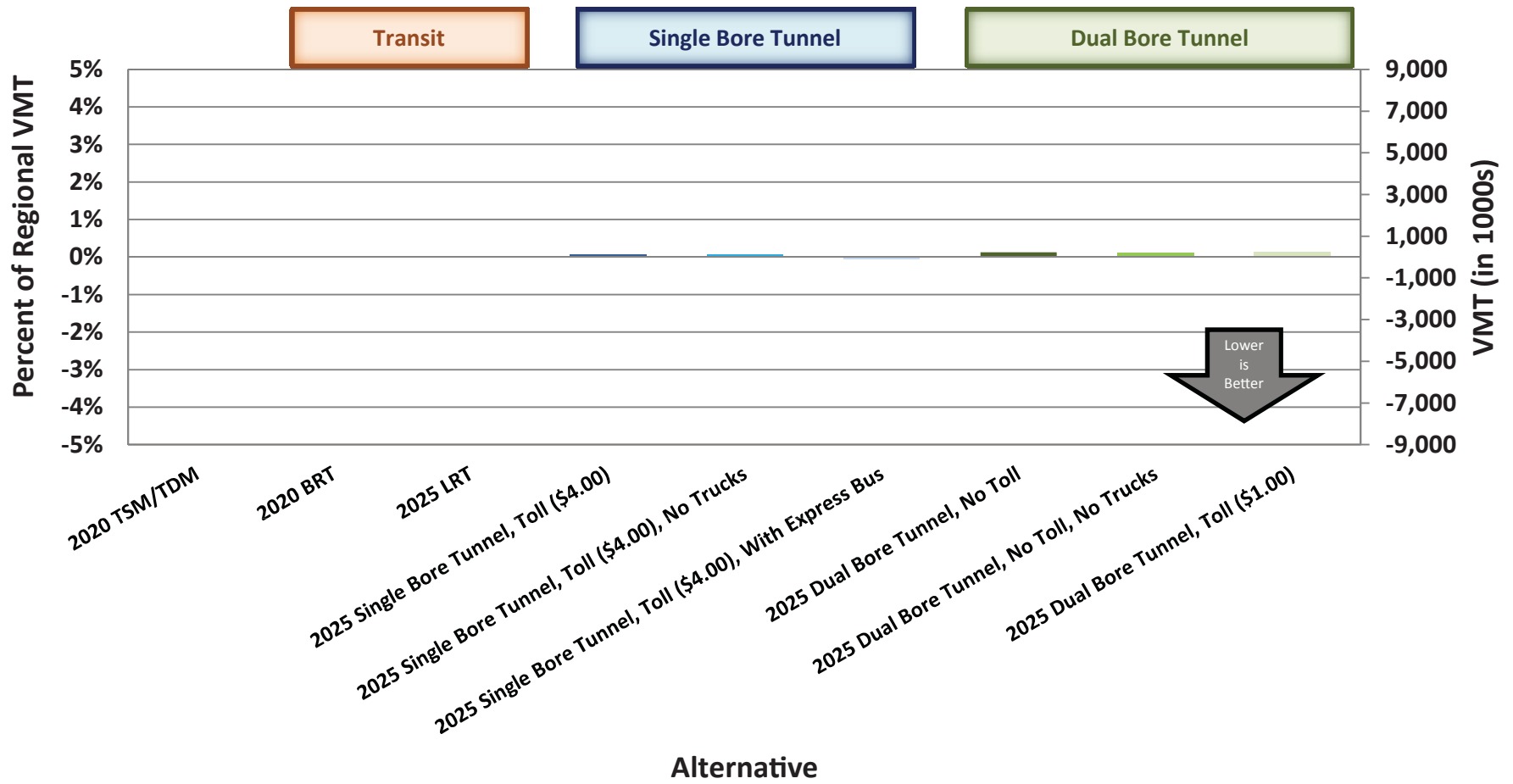


FIGURE 4-5
 Change in Combined AM and PM Peak Period VMT
 in the Region - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

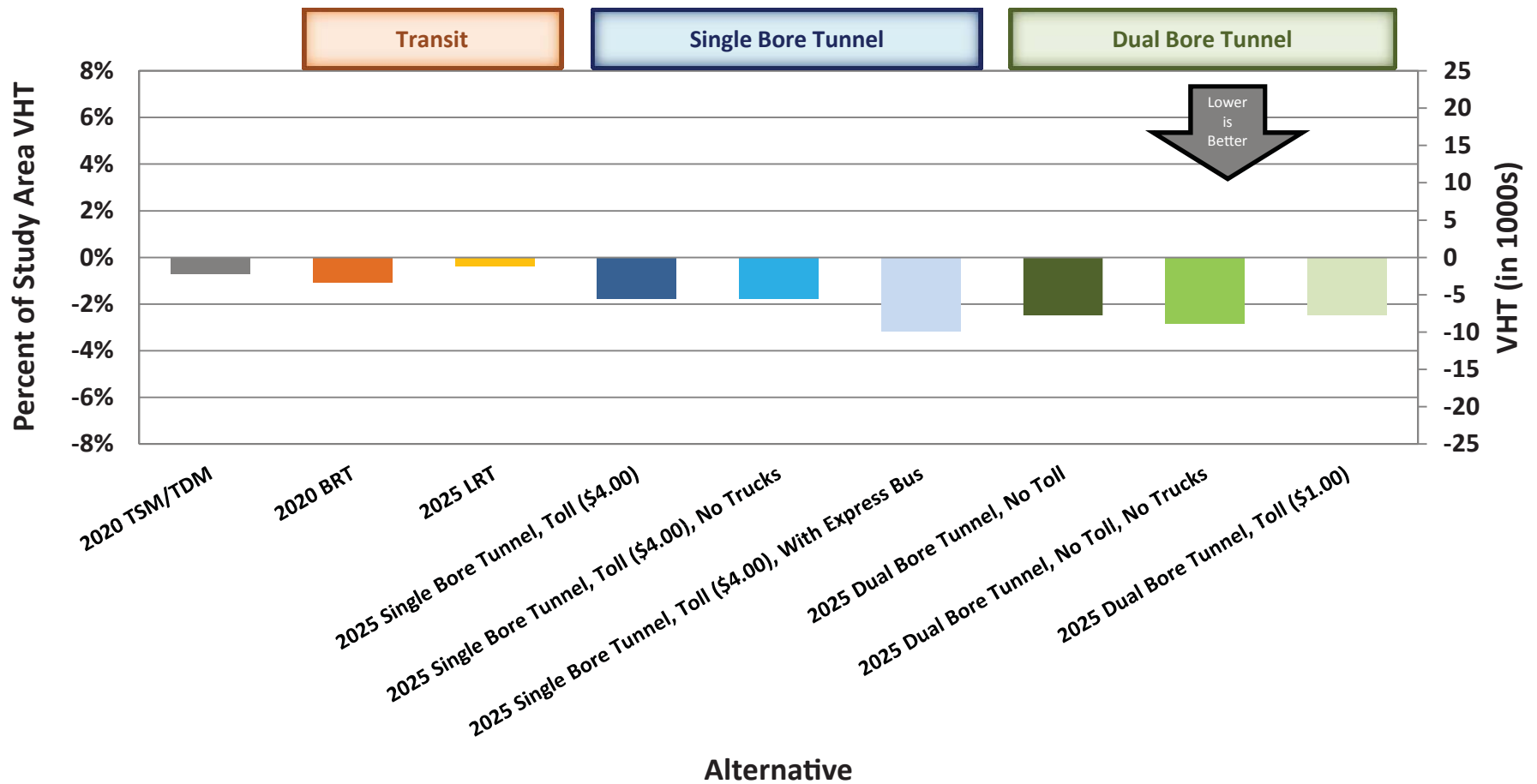


FIGURE 4-6
 Change in Combined AM and PM Peak Period VHT
 in the Study Area - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

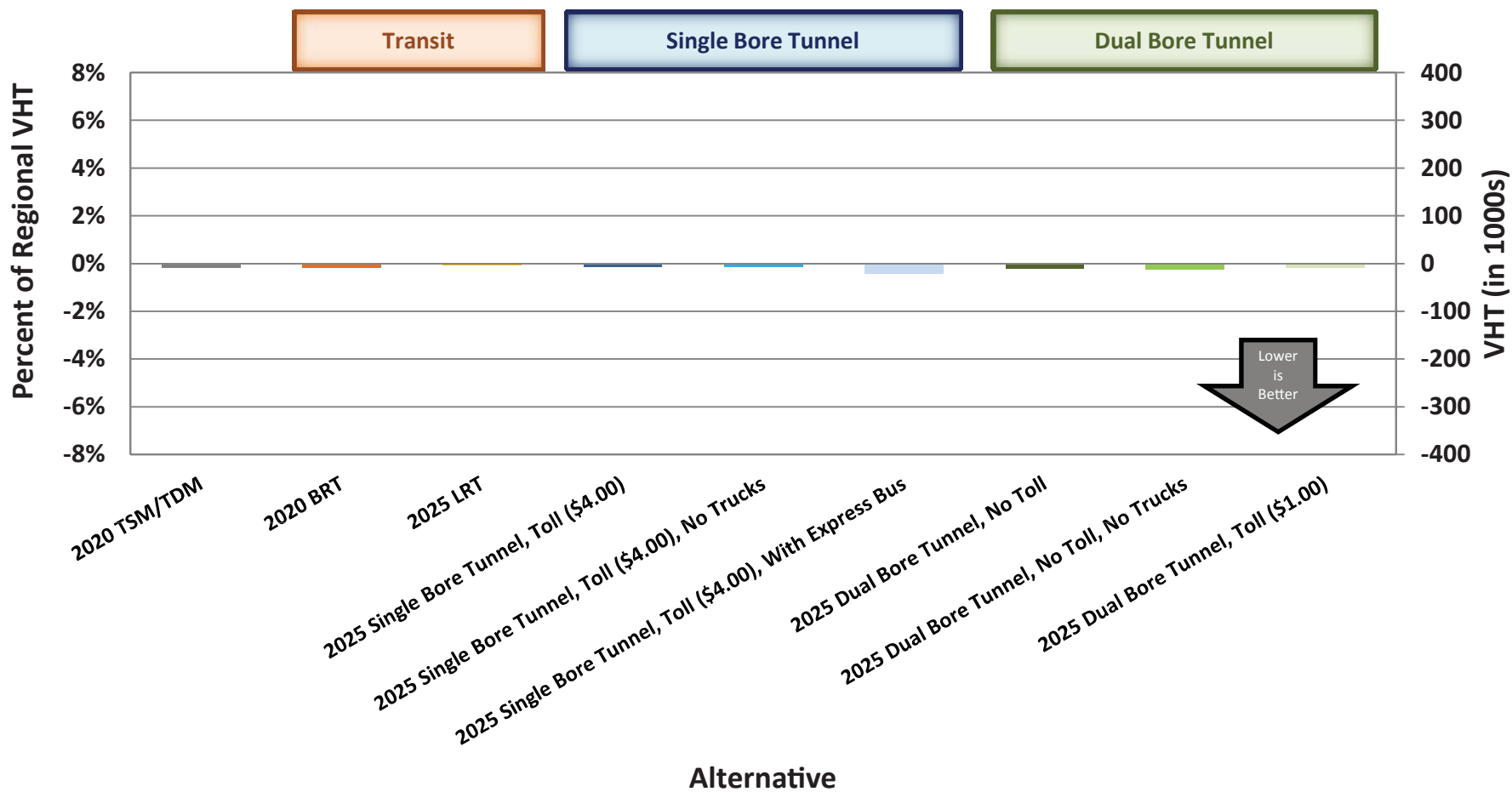


FIGURE 4-7
 Change in Combined AM and PM Peak Period VHT
 in the Region - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

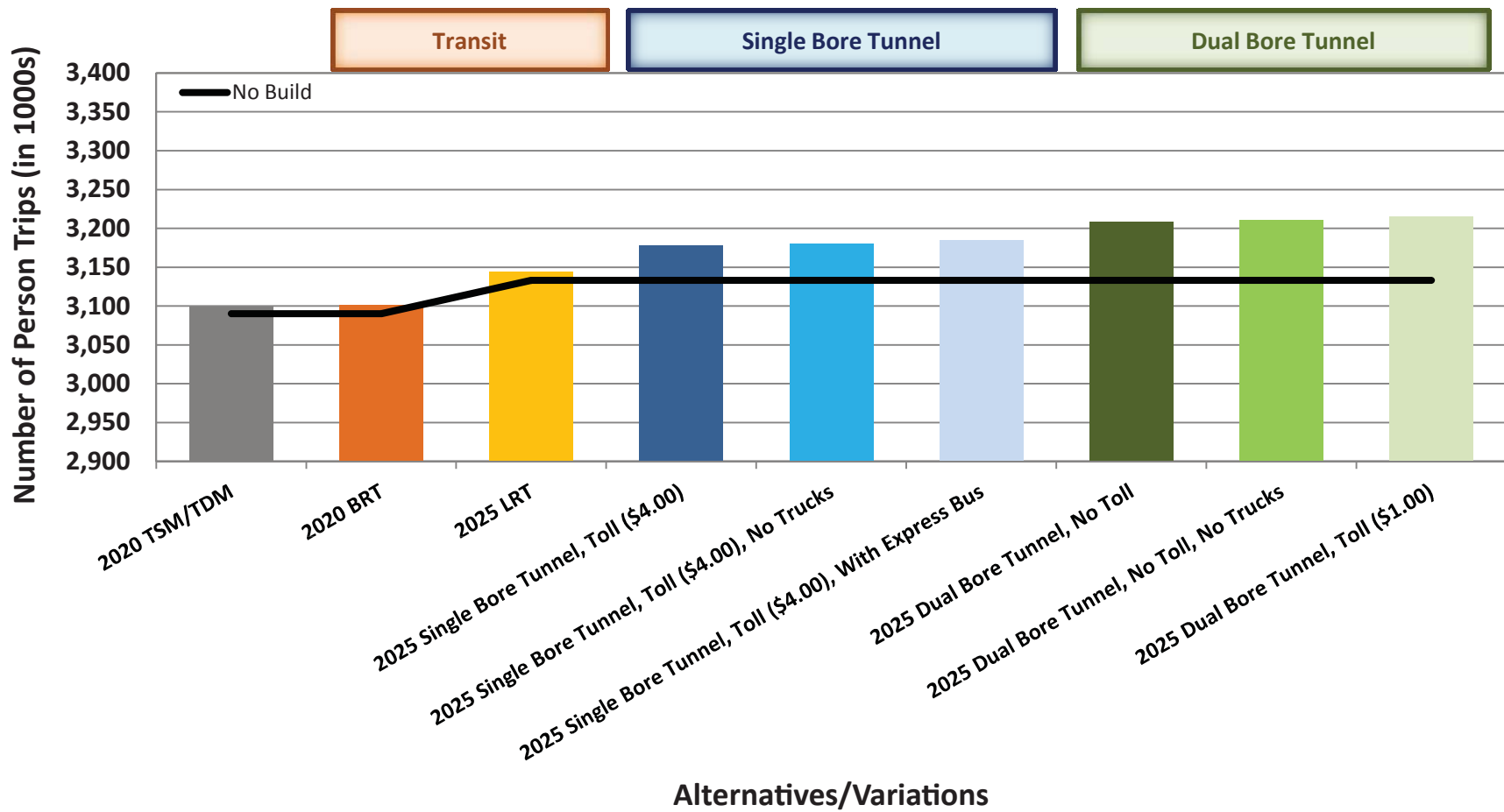


FIGURE 4-8
 Daily Person Trips Crossing the East-West Screenline
 for Auto and Transit - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

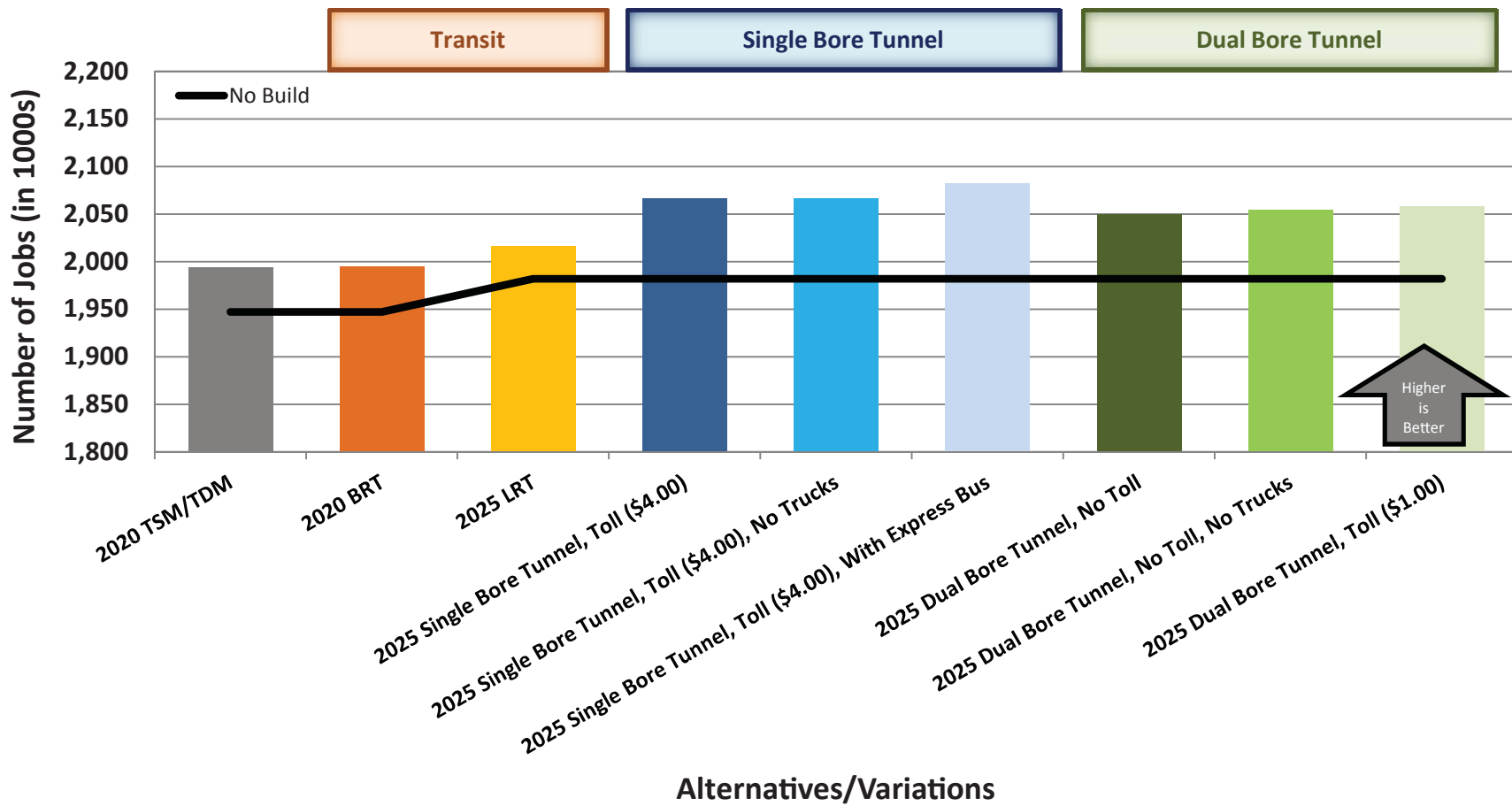


FIGURE 4-9
 Number of Jobs Accessible within 29.4 Minutes (AM and PM Peak Period) of 12 Origin Locations - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

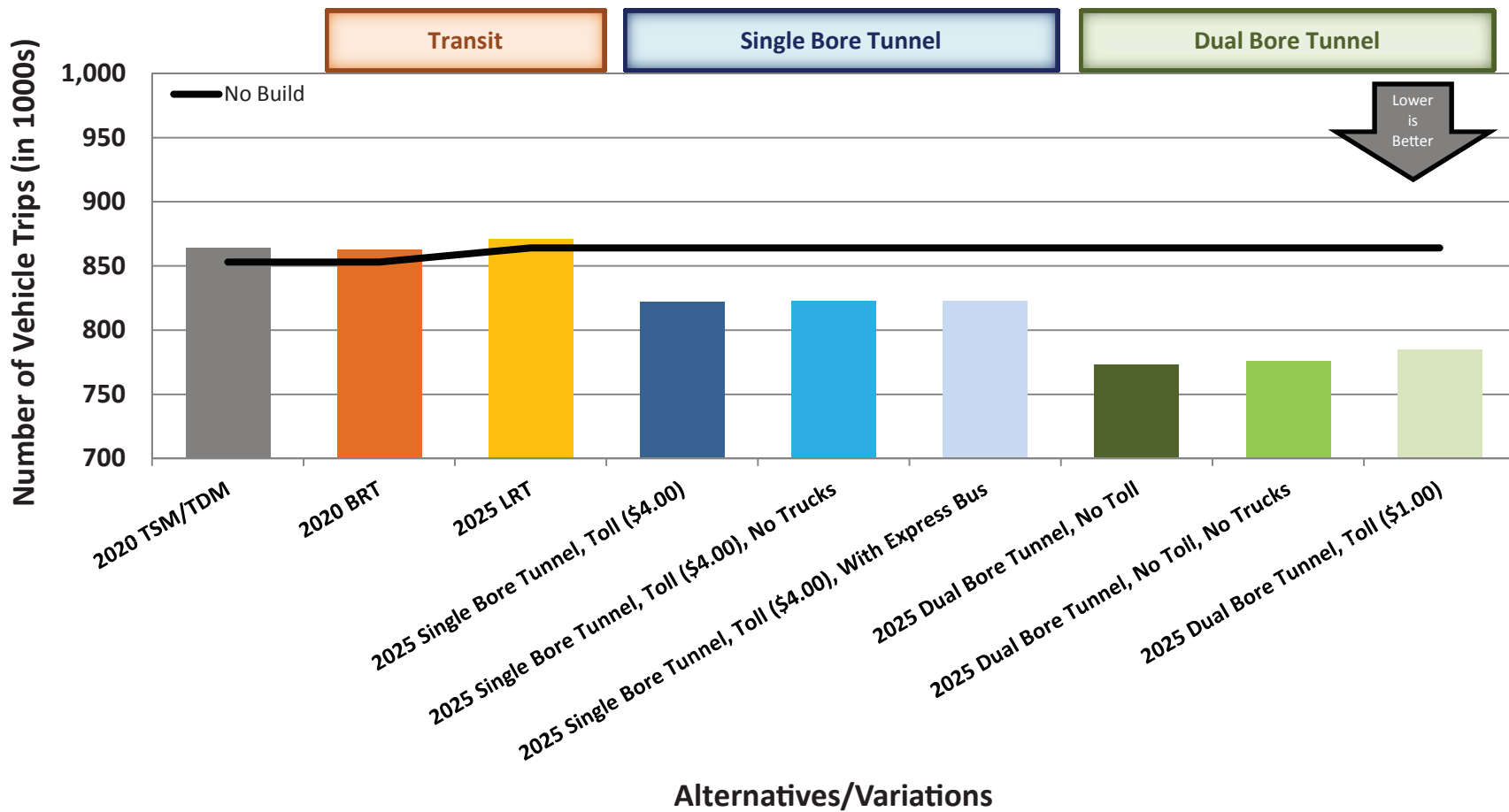


FIGURE 4-10
 Daily Volume Crossing the East-West Screenline on
 Arterials - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

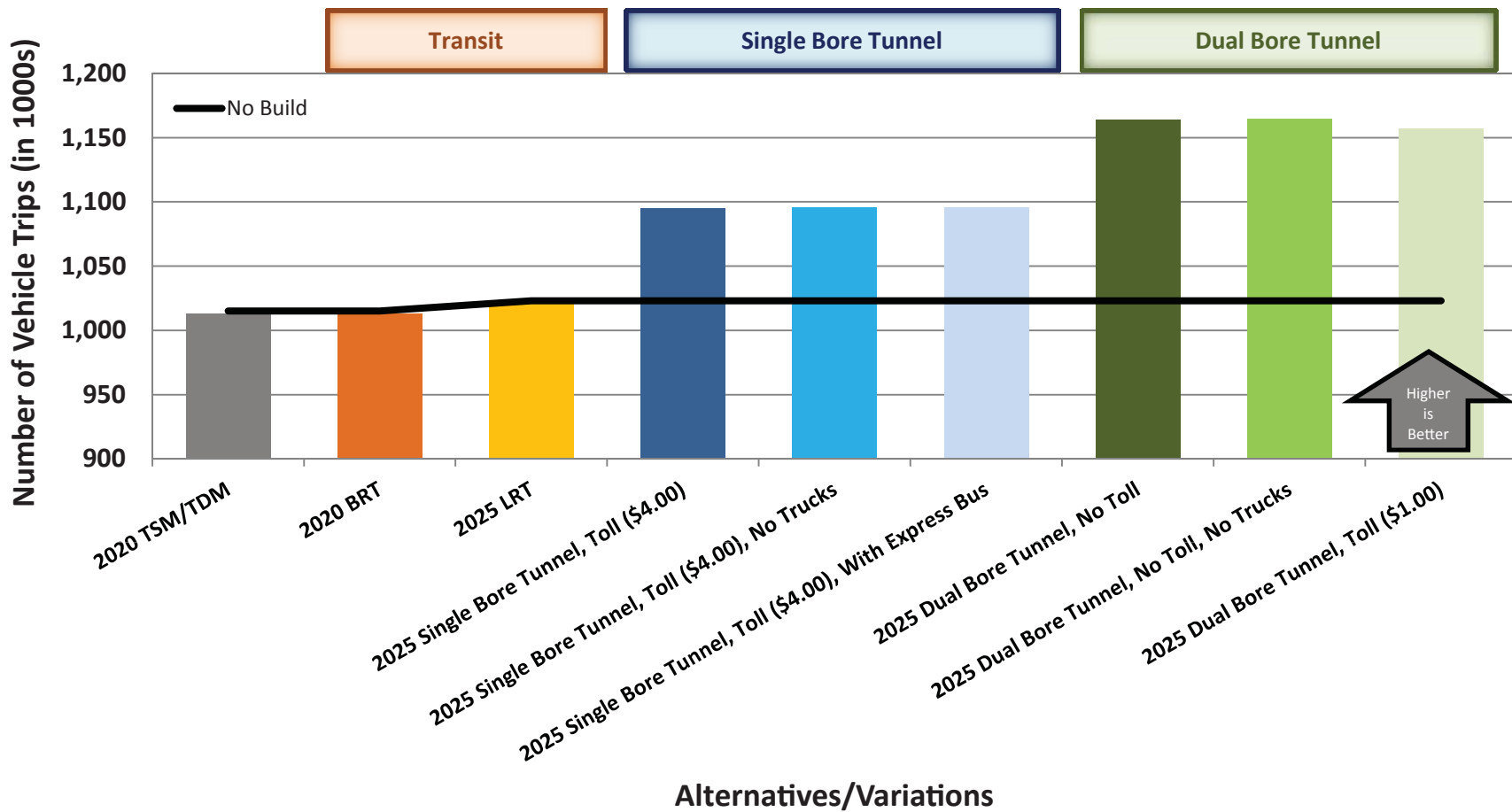


FIGURE 4-11
 Daily Volume Crossing the East-West Screenline on
 Freeways - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

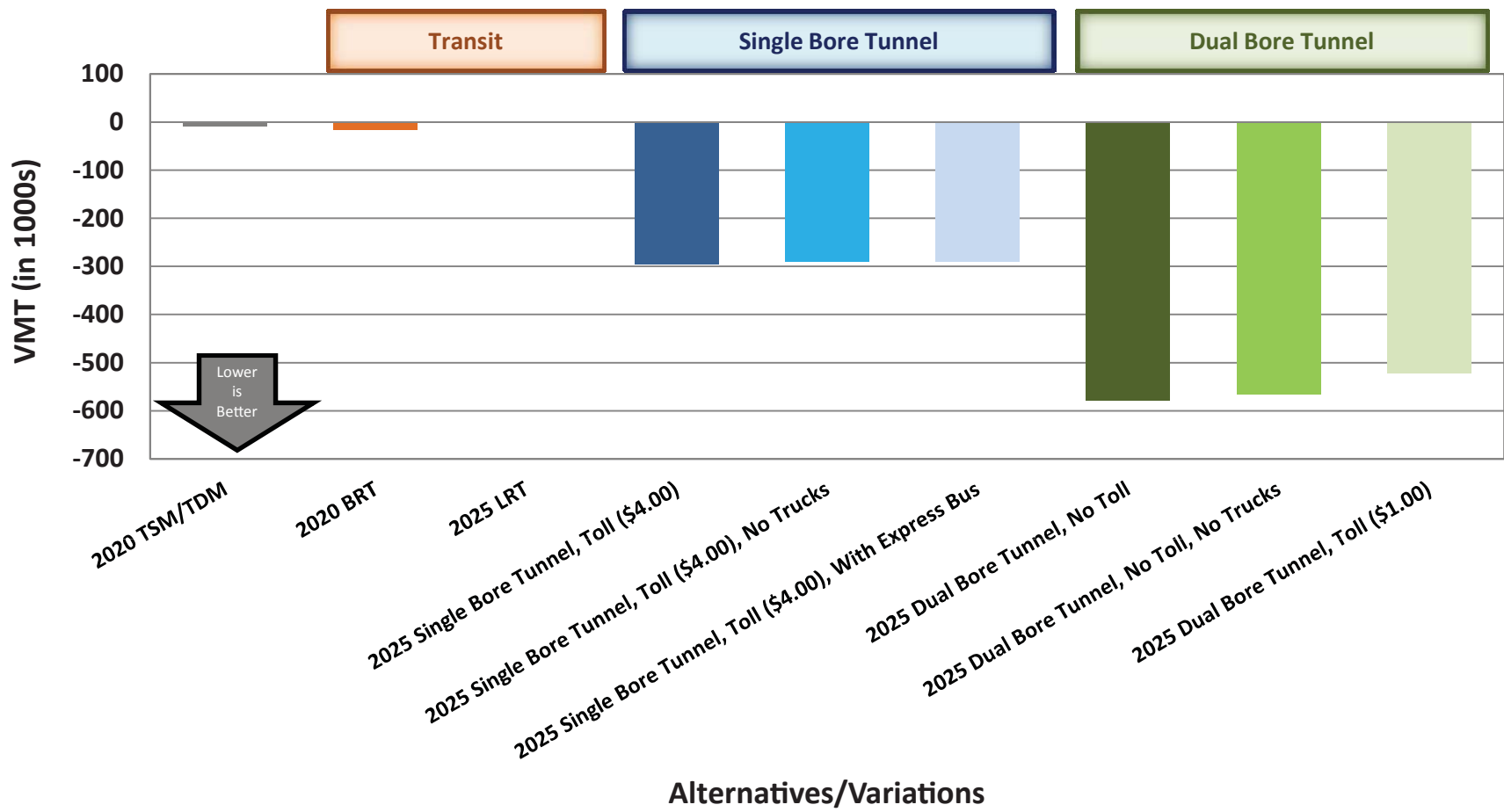


FIGURE 4-12
 Daily Change in Study Area VMT on the Arterial
 Roadway System - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

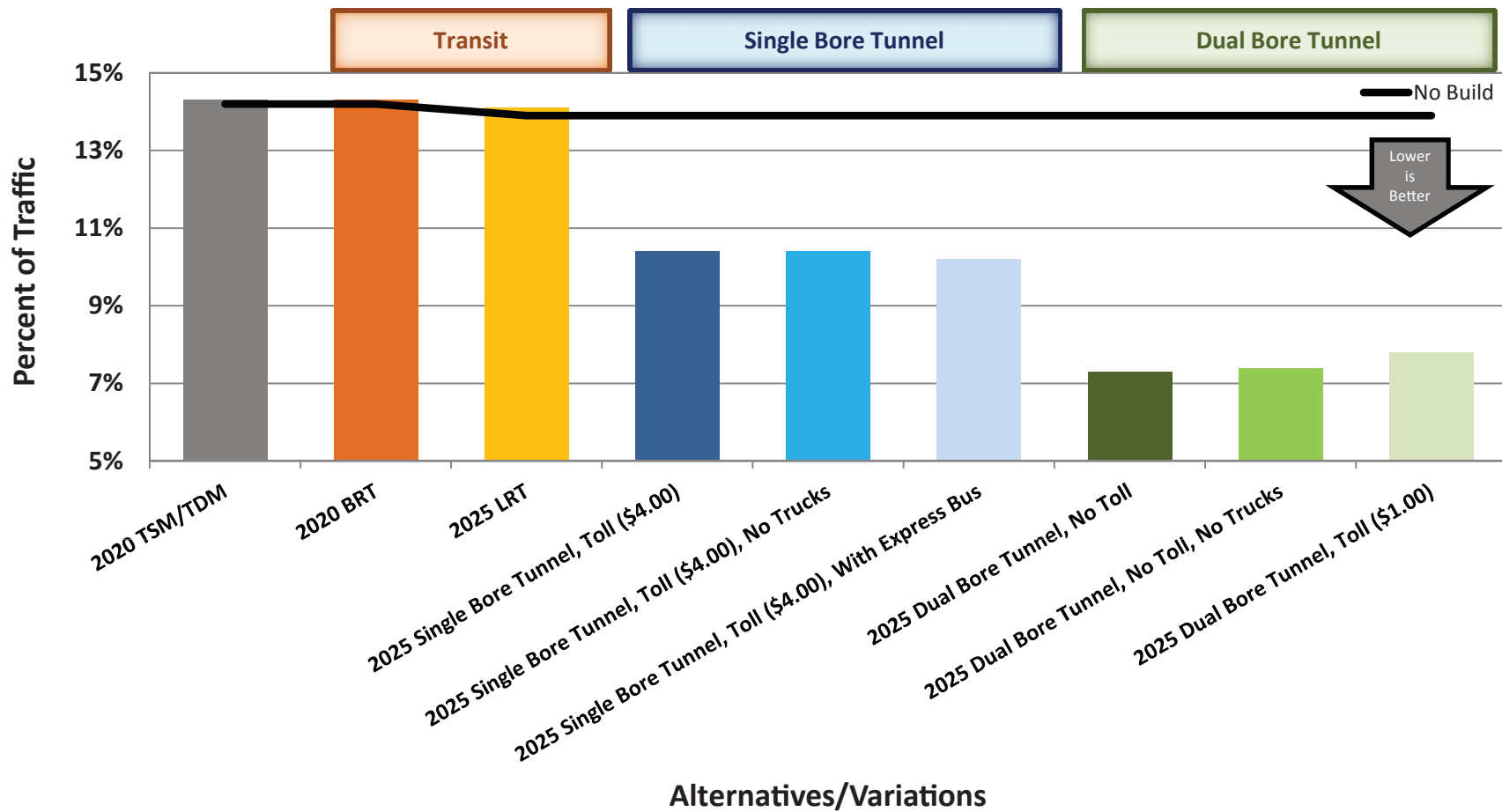


FIGURE 4-13
 Use of Study Area Local Arterials for Long Trips for
 the PM Peak Period - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

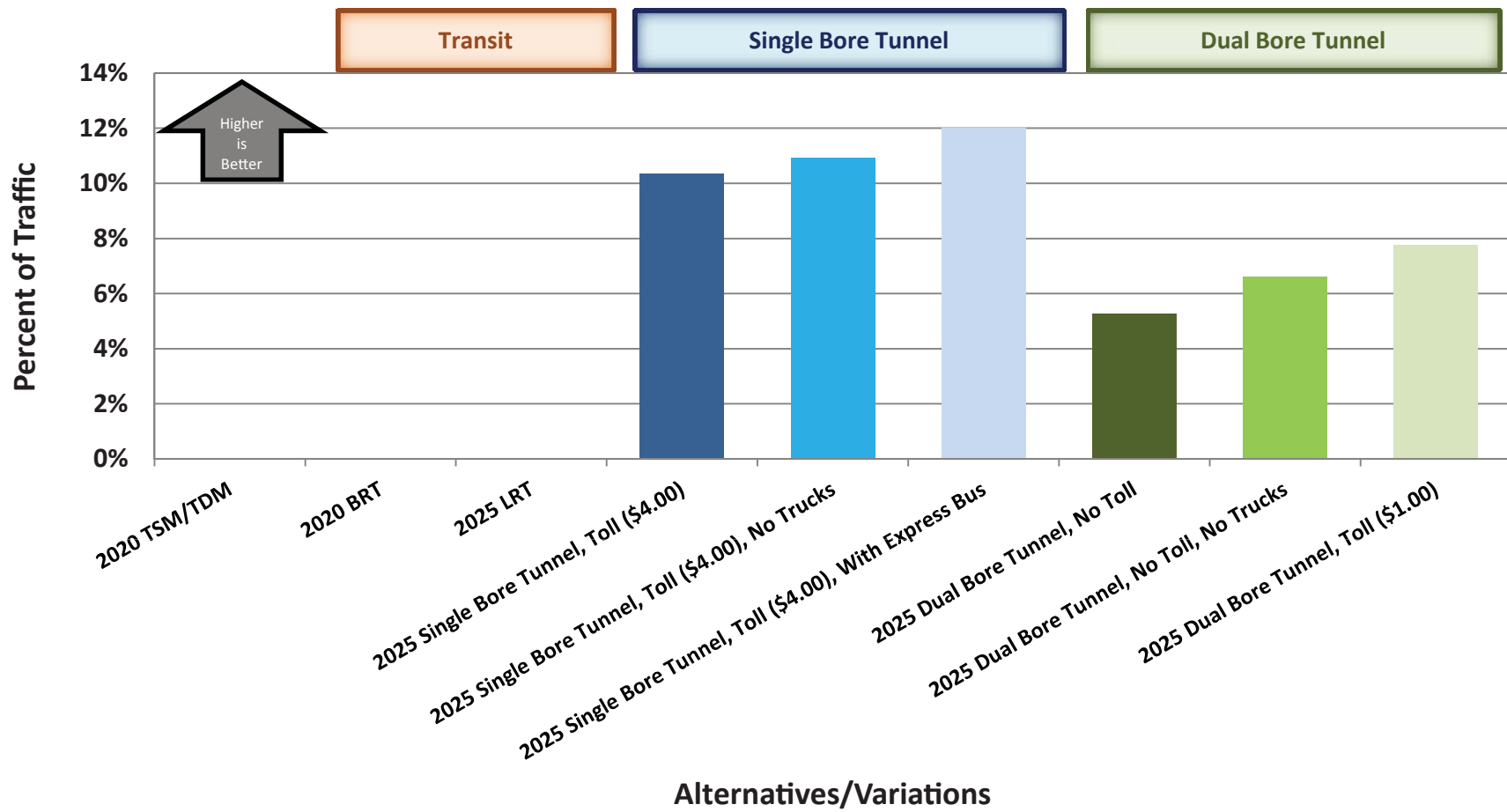


FIGURE 4-14
 Percent of AM and PM Peak Period Trips with a Travel Time Savings of More than 2.5 Minutes - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

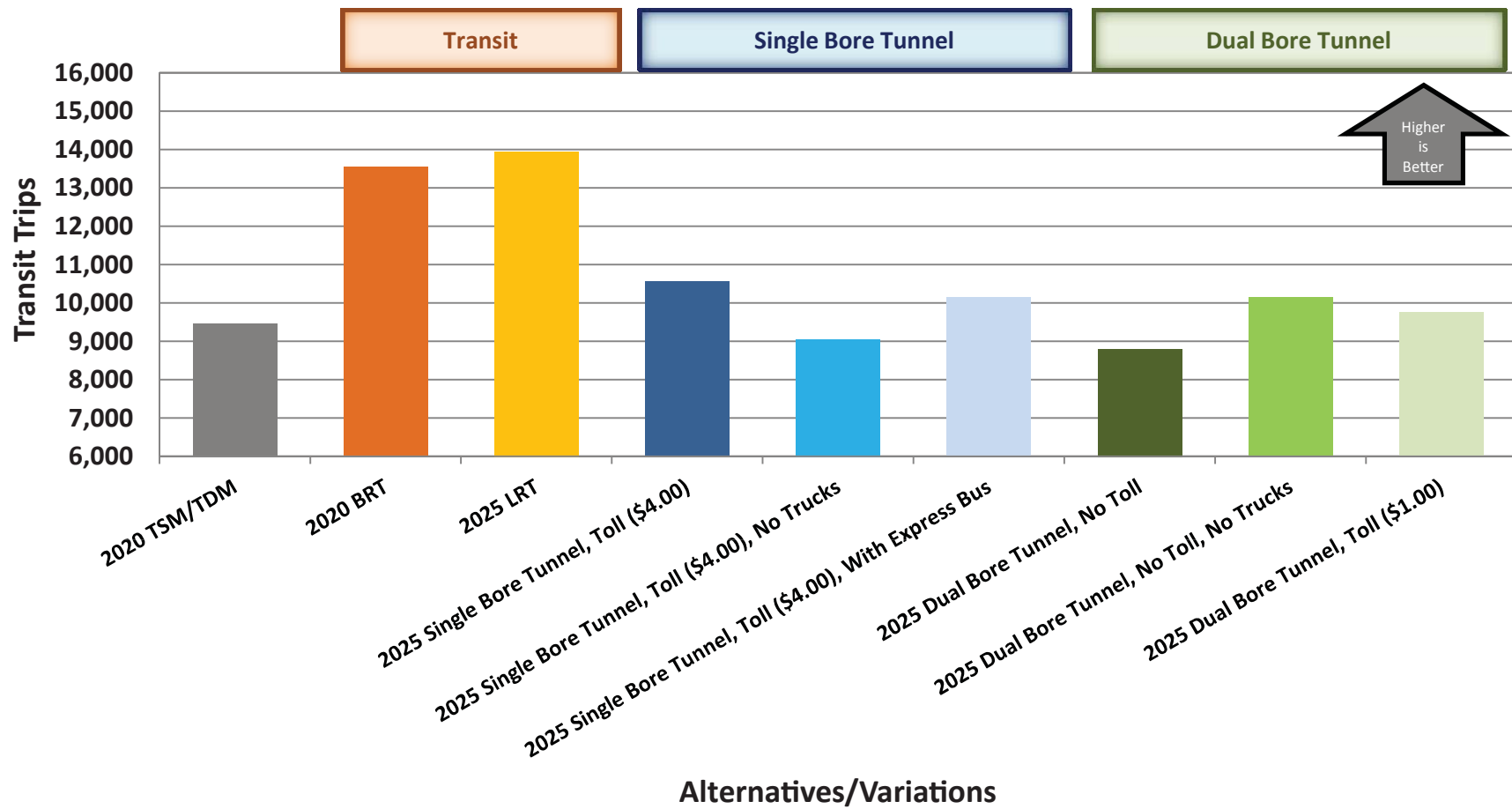


FIGURE 4-15
 Change in Daily Linked Transit Trips Compared to
 No Build Alternative - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

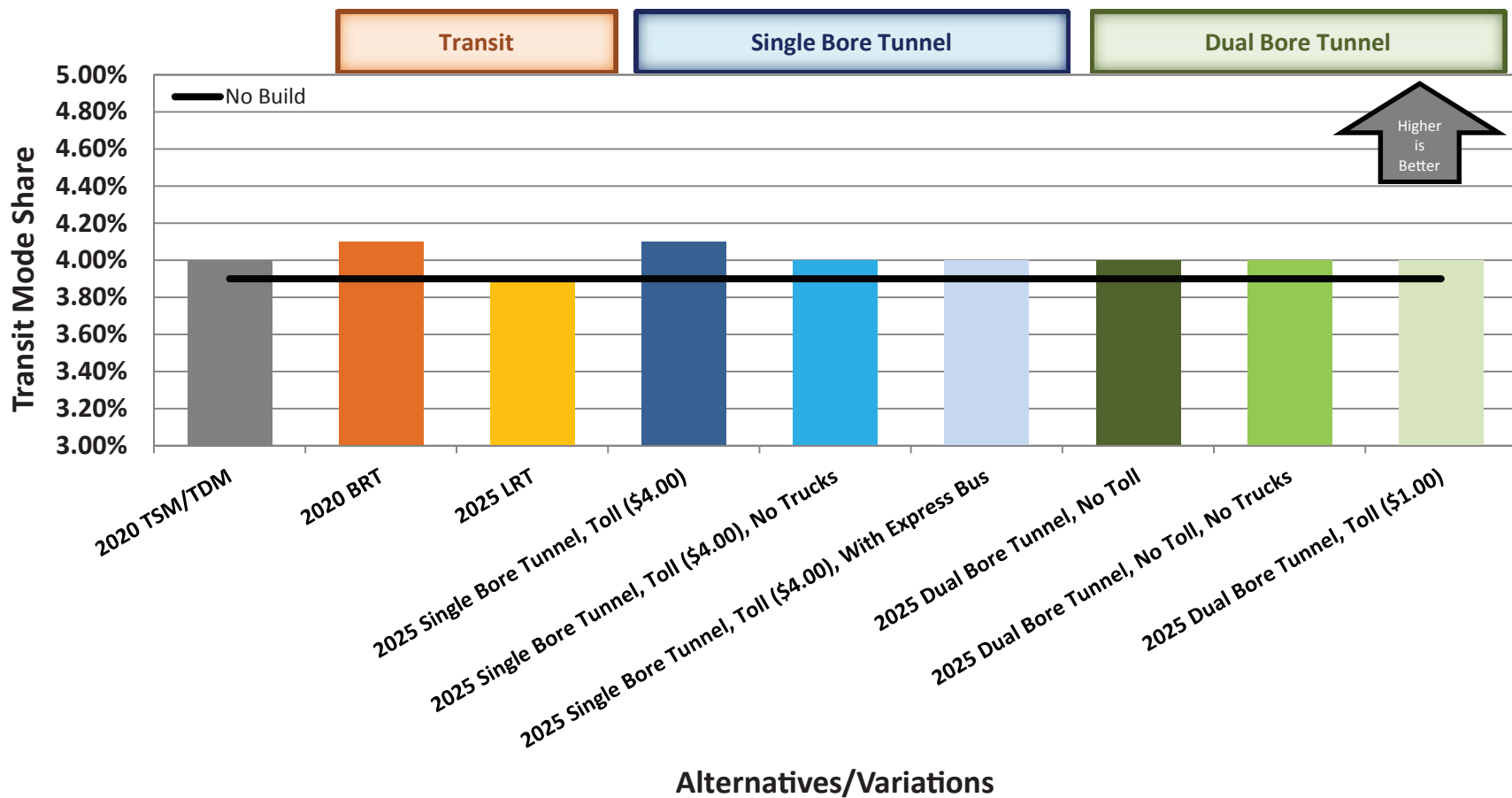


FIGURE 4-16
 Daily Transit Mode Share within the Study Area -
 Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

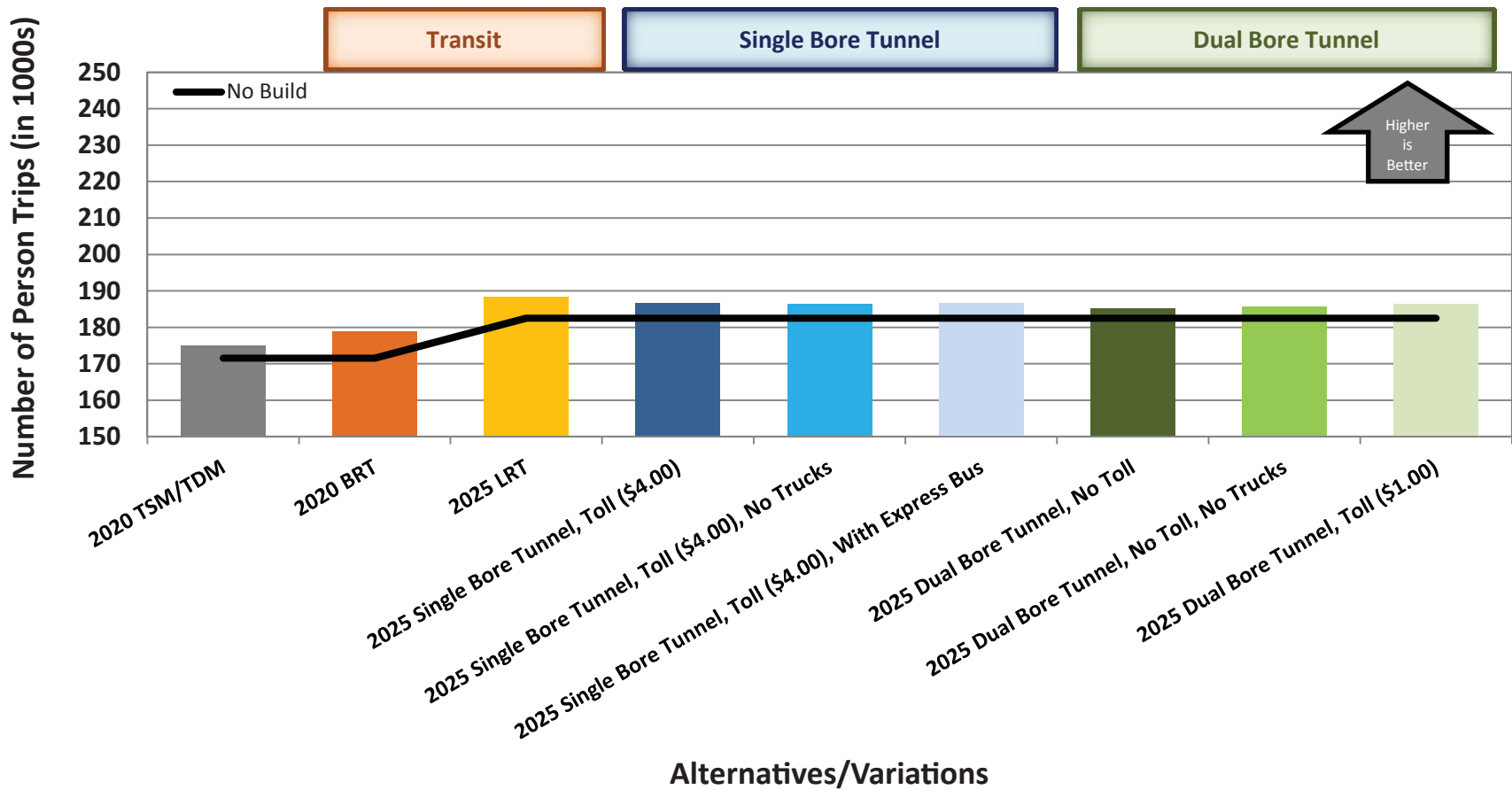


FIGURE 4-17
 Daily Person Travel Crossing the East-West
 Screenline for Transit - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

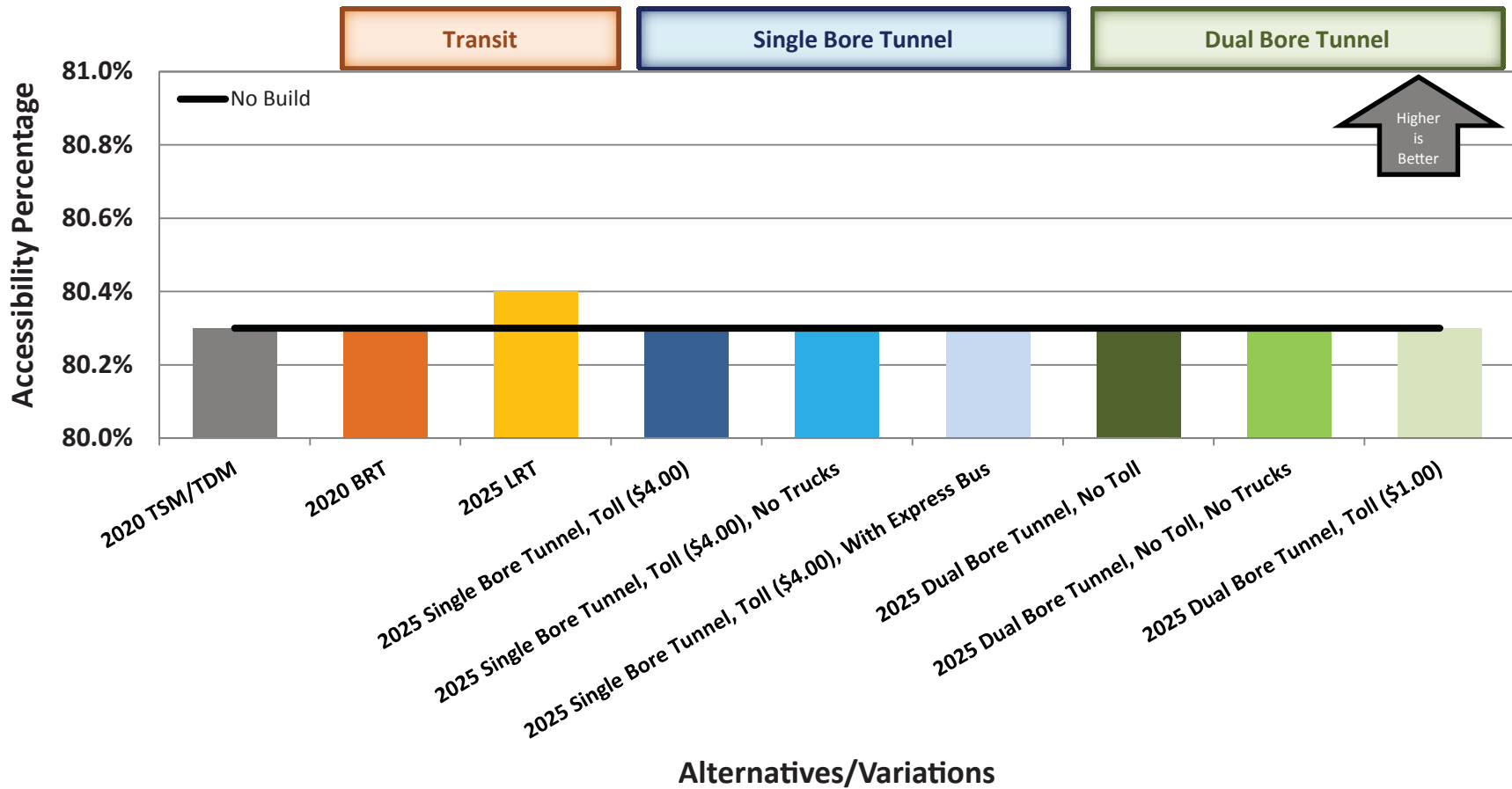


FIGURE 4-18
 Percentage of Population and Employment within 1/4 Mile of
 High Frequency Transit Service - Opening Year (2020, 2025)
 SR 710 North Study
 Los Angeles County, California

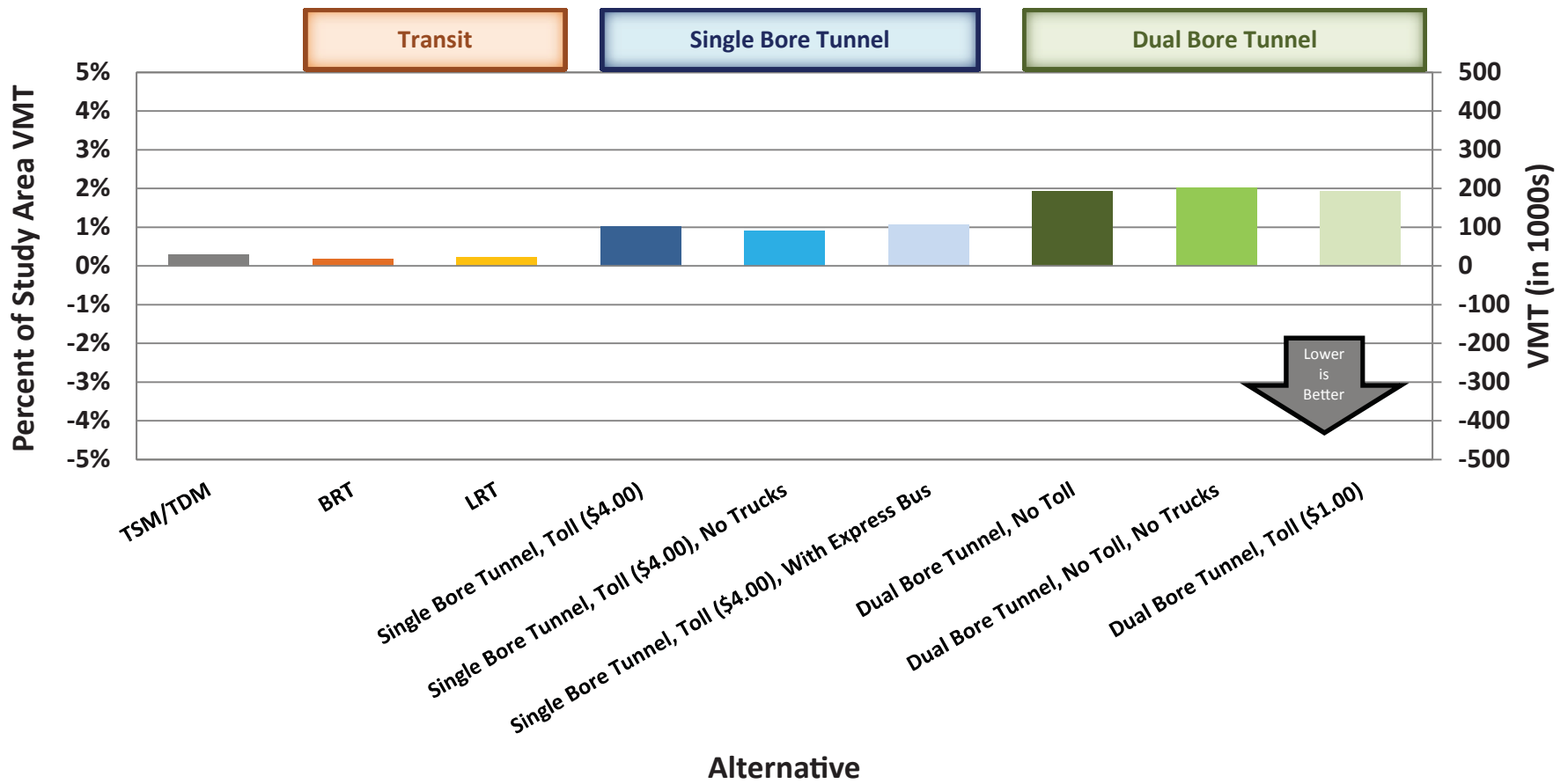


FIGURE 4-19
 Change in Combined AM and PM Peak Period VMT
 in the Study Area - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

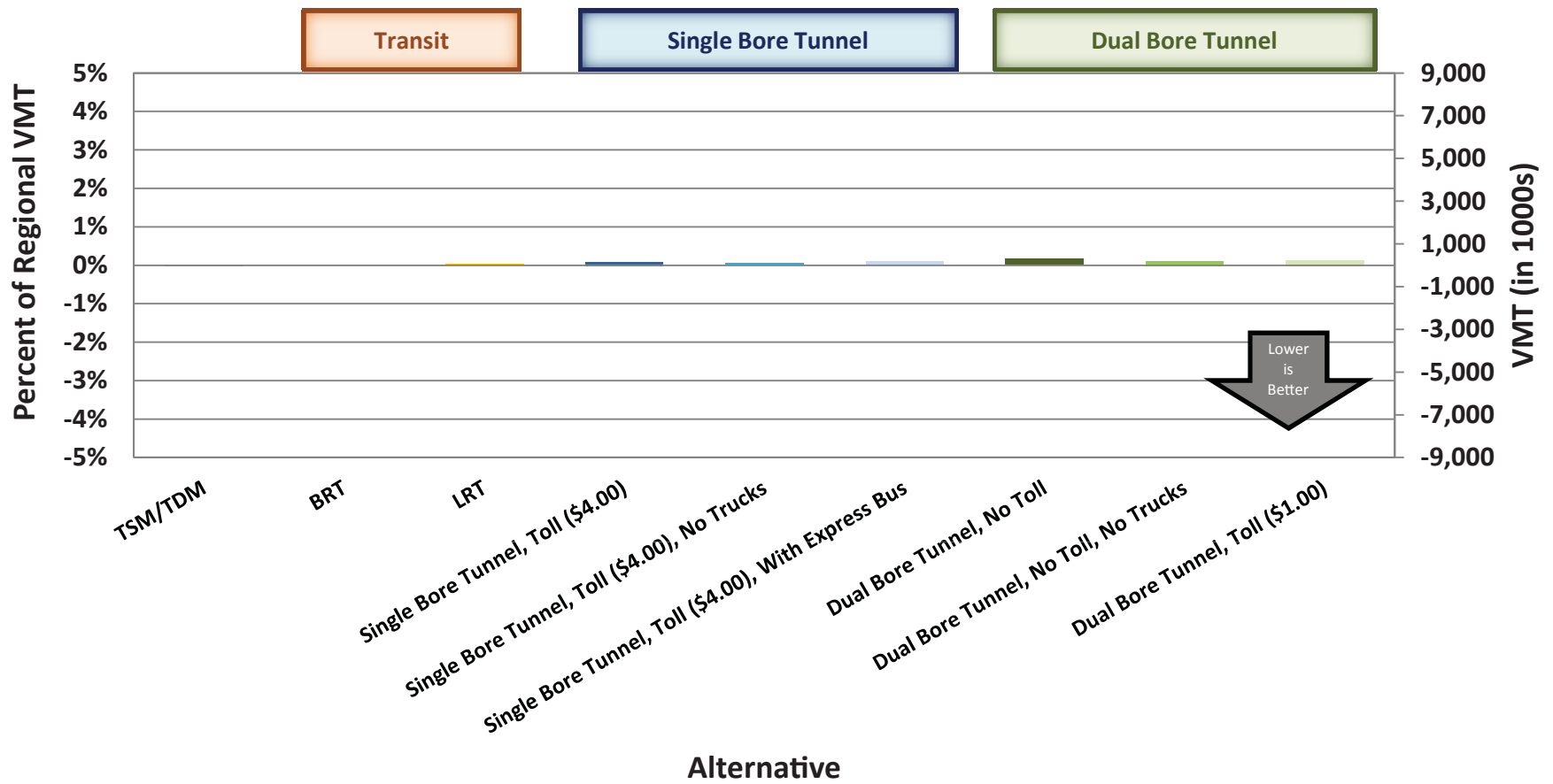


FIGURE 4-20
 Change in Combined AM and PM Peak Period VMT
 in the Region - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

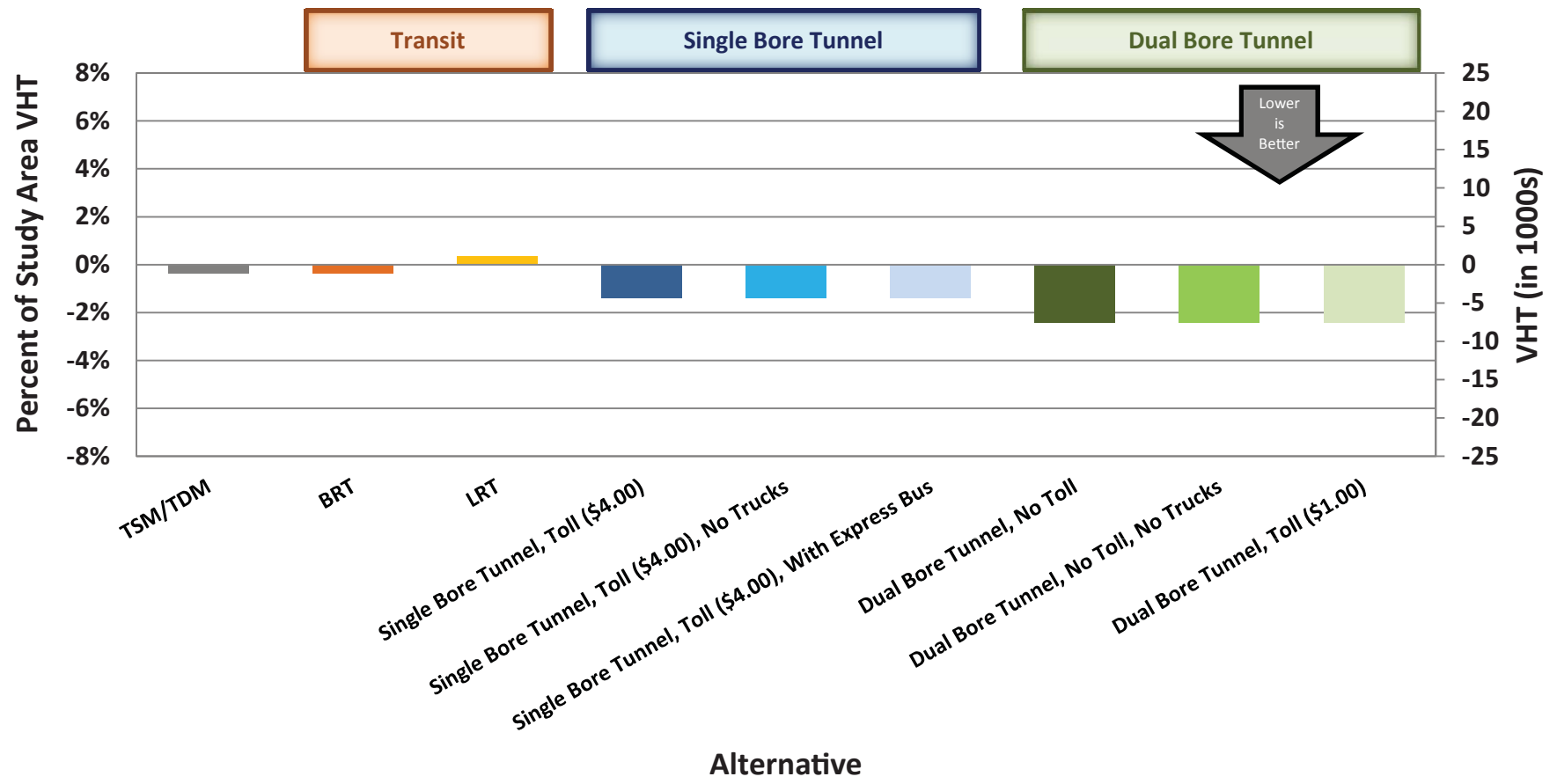


FIGURE 4-21
 Change in Combined AM and PM Peak Period VHT
 in the Study Area - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

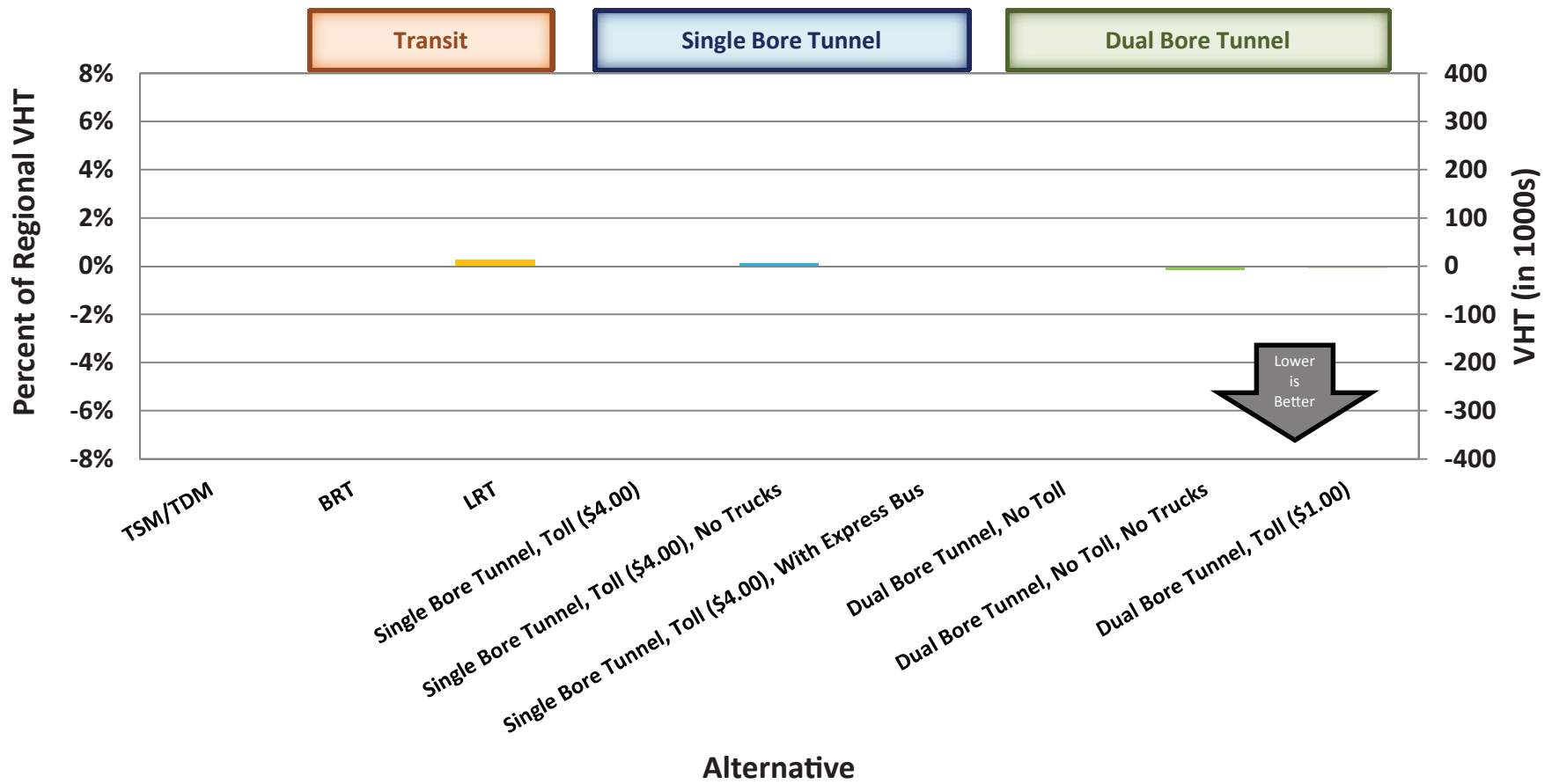


FIGURE 4-22
 Change in Combined AM and PM Peak Period VHT
 in the Region - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

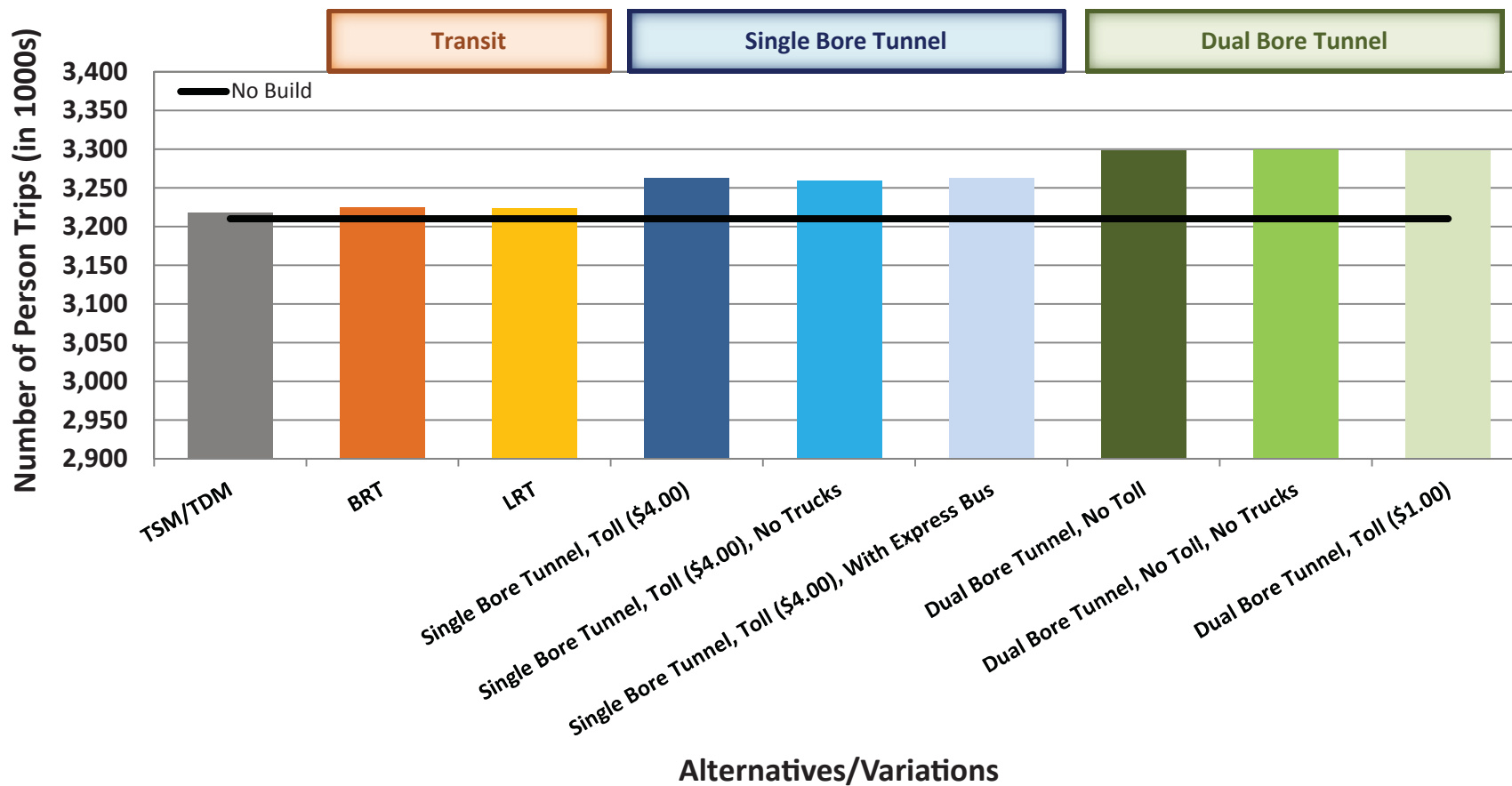


FIGURE 4-23
 Daily Person Trips Crossing the East-West Screenline
 for Auto and Transit - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

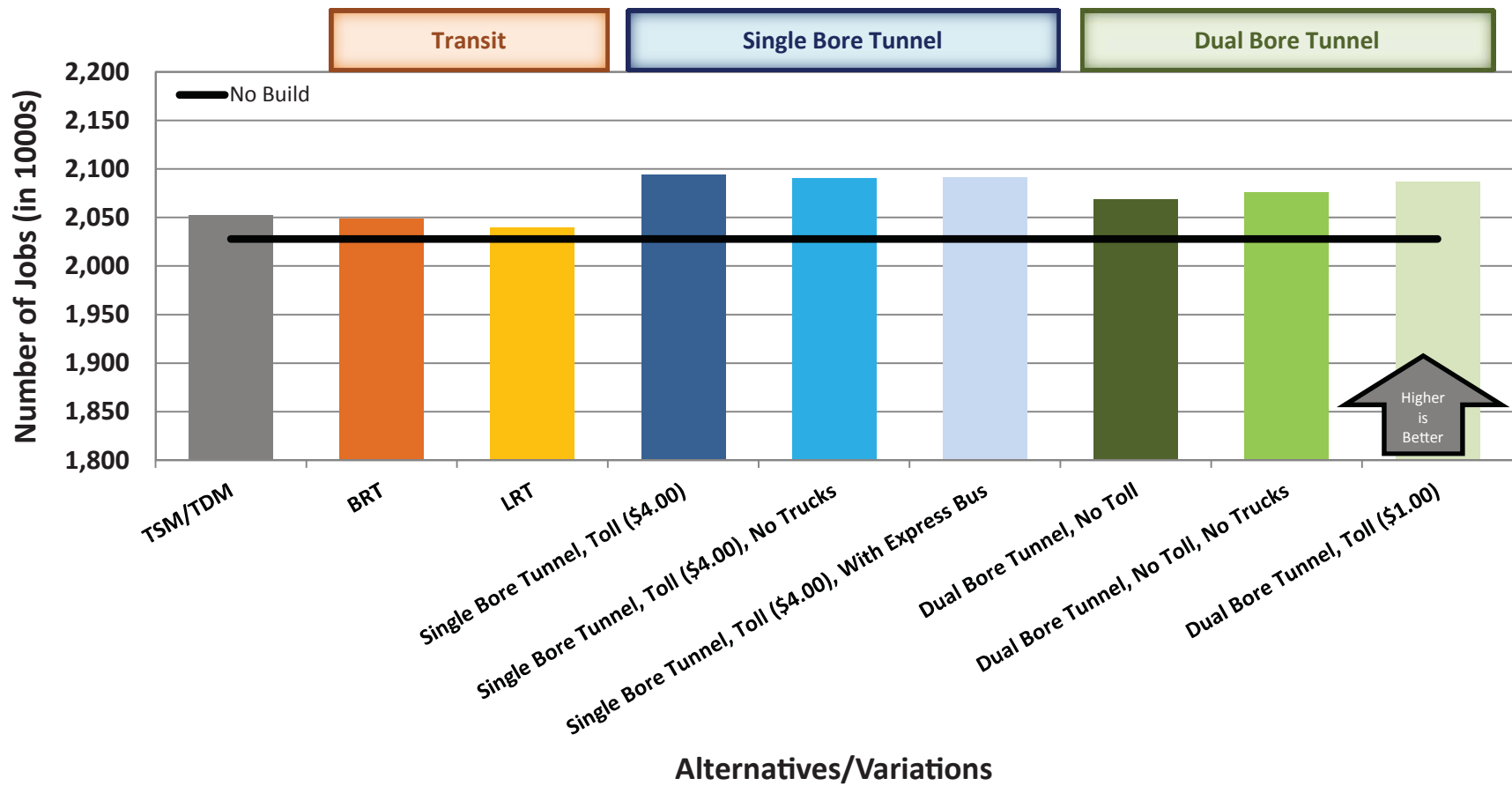


FIGURE 4-24
 Number of Jobs Accessible within 29.4 Minutes (AM and PM
 Peak Period) of 12 Origin Locations - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

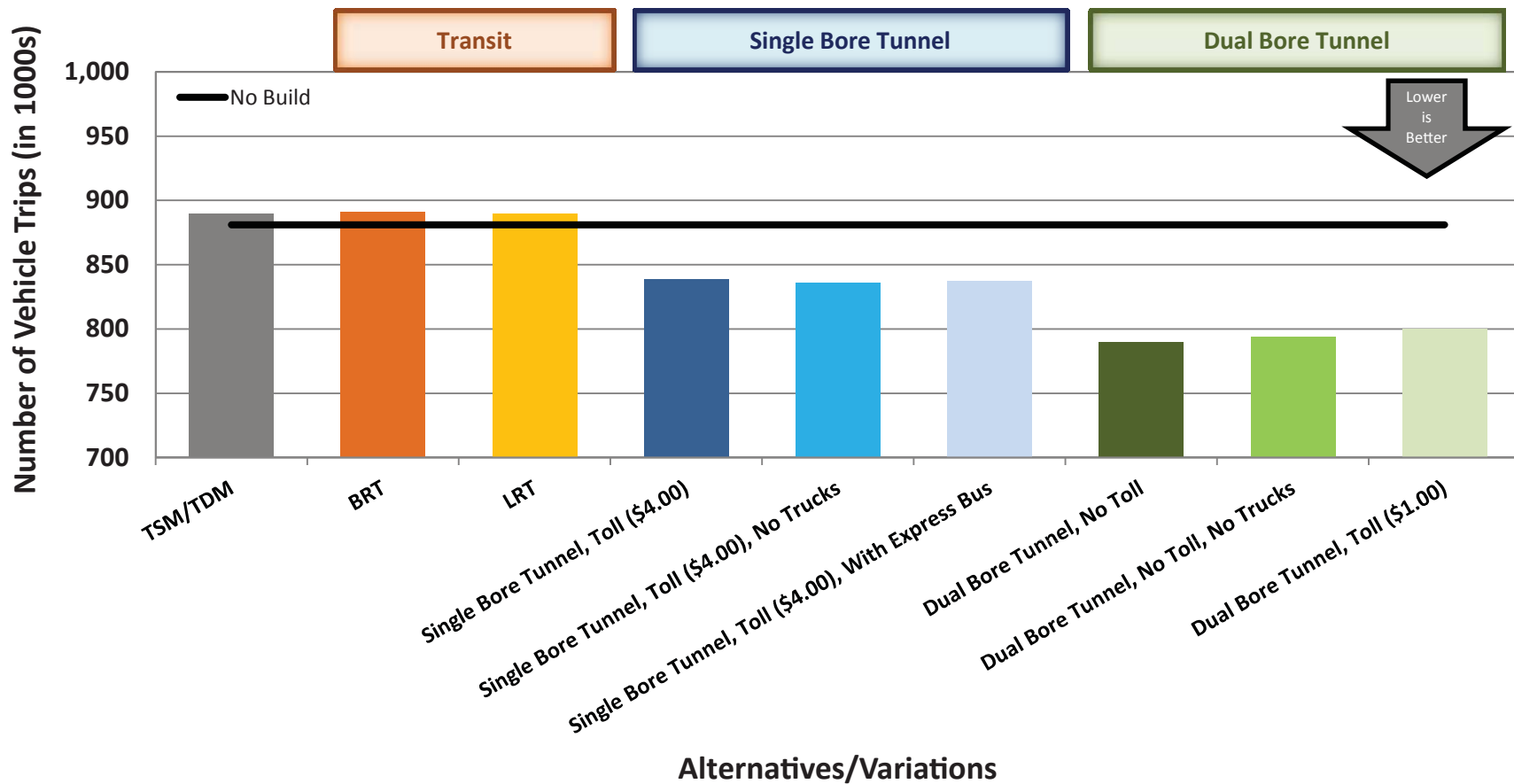


FIGURE 4-25
 Daily Volume Crossing the East-West Screenline on
 Arterials - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

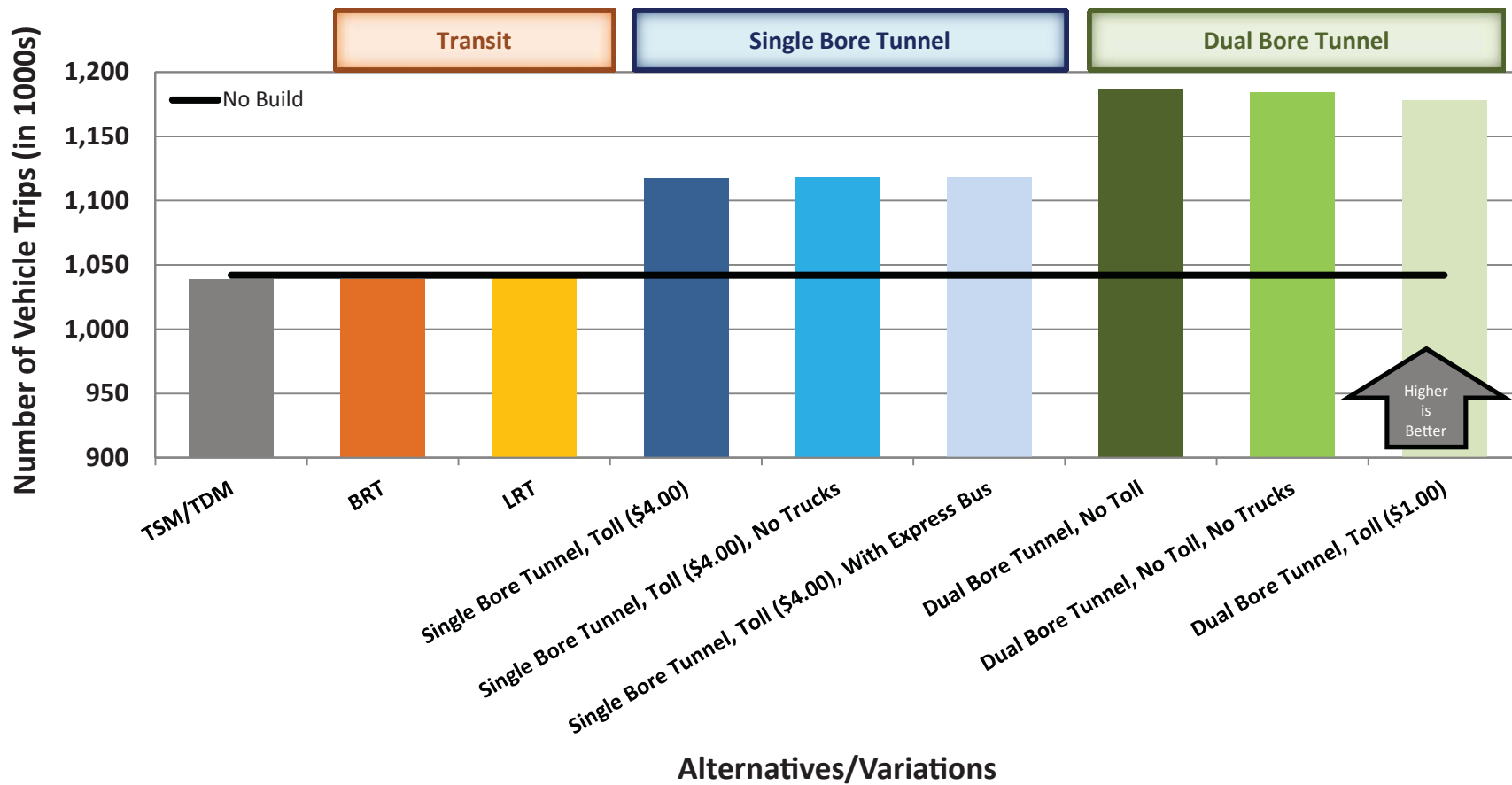


FIGURE 4-26
 Daily Volume Crossing the East-West Screenline on
 Freeways - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

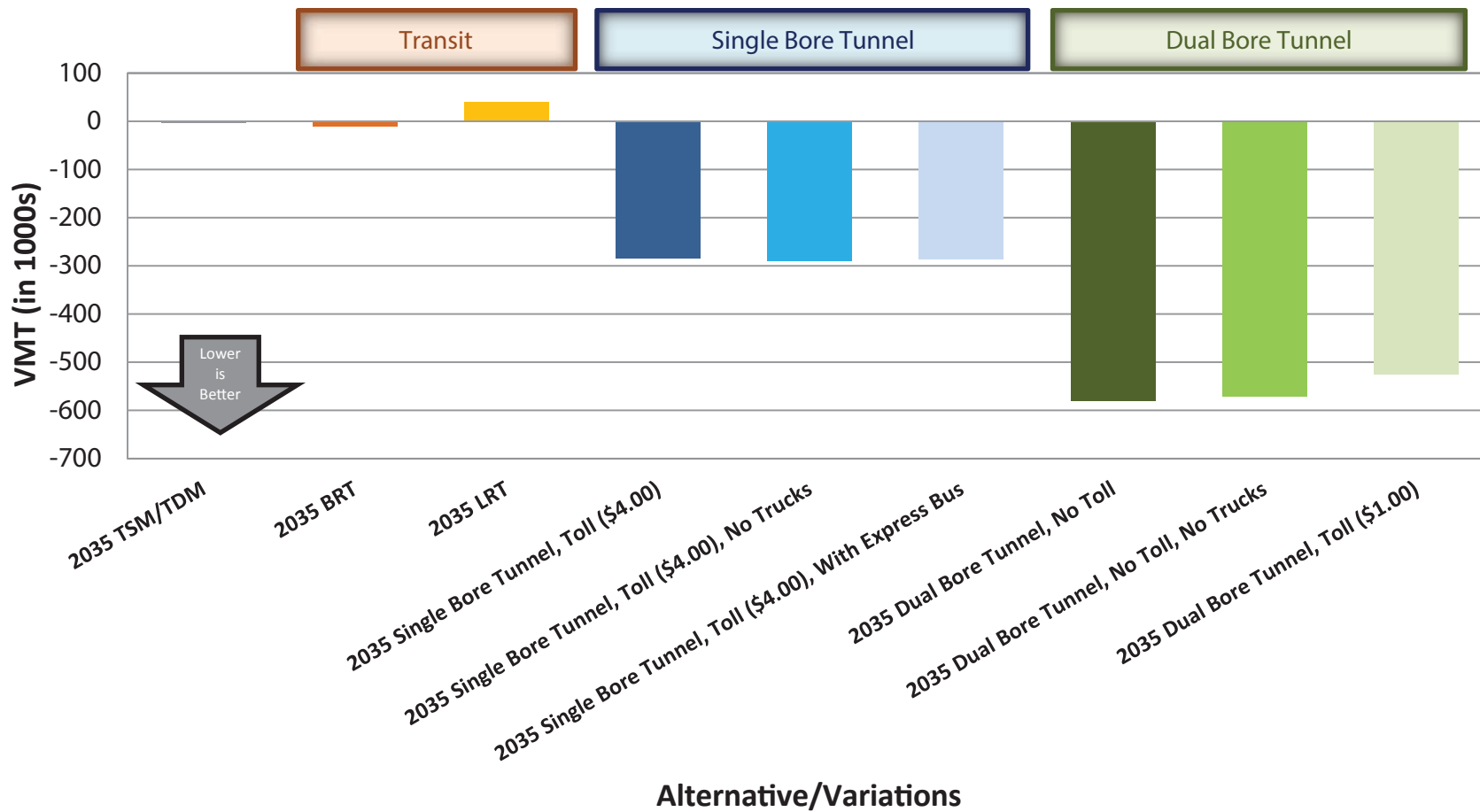


FIGURE 4-27
 Daily Change in Study Area VMT on the Arterial
 Roadway System - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

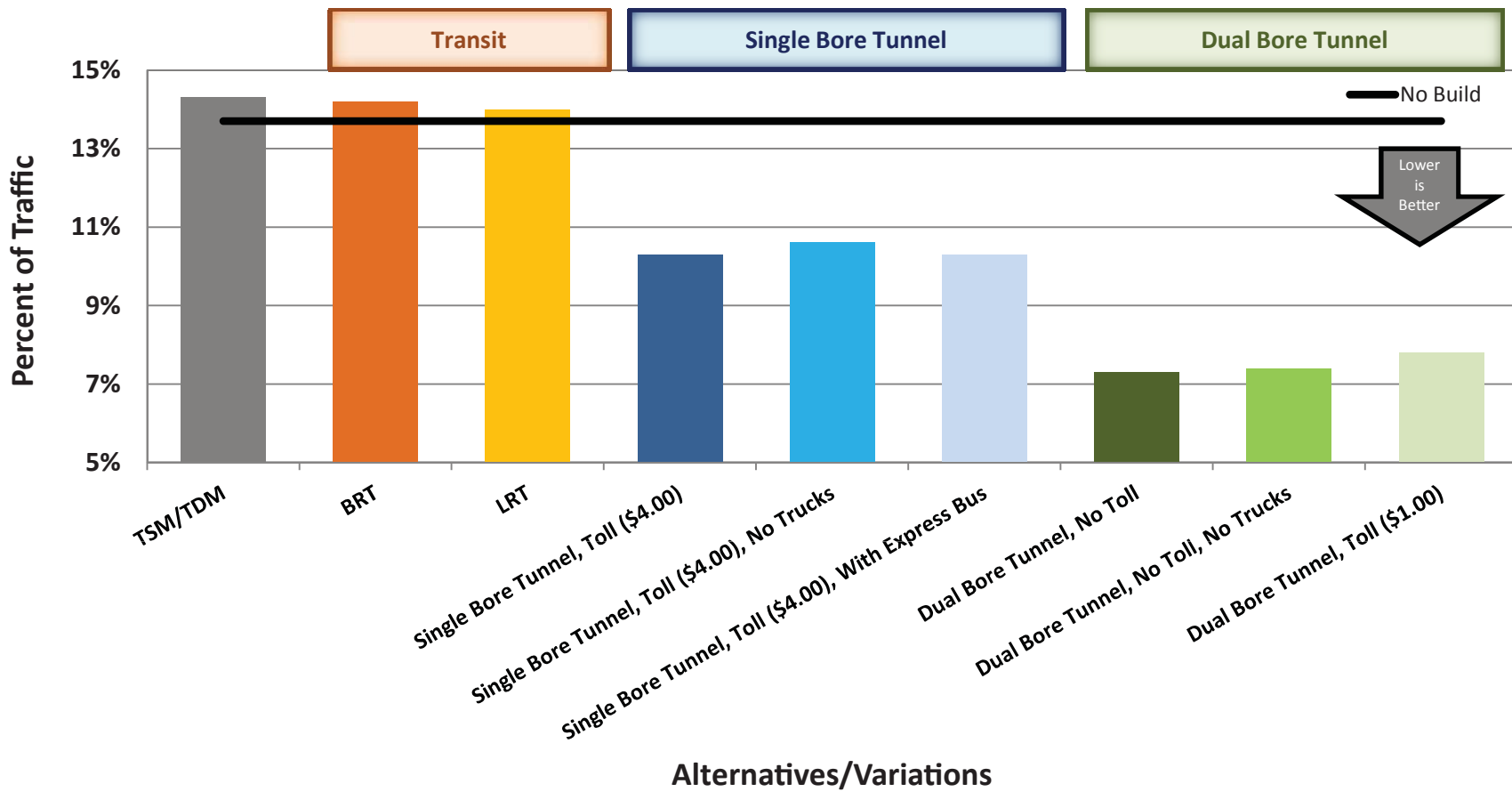


FIGURE 4-28
 Use of Study Area Local Arterials for Long Trips for
 the PM Peak Period - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

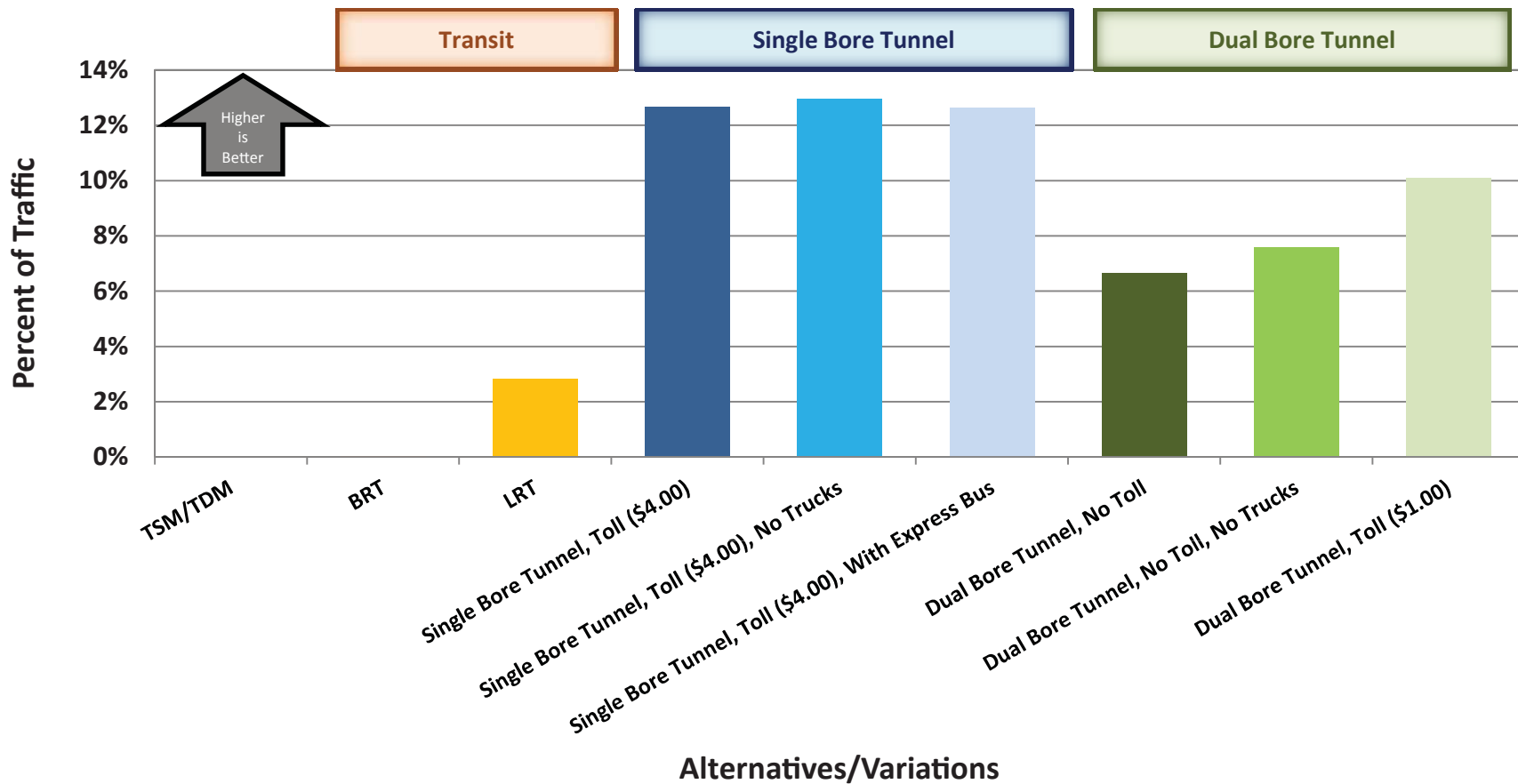


FIGURE 4-29
 Percent of AM and PM Peak Period Trips with a Travel Time Savings of More than 2.5 Minutes - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

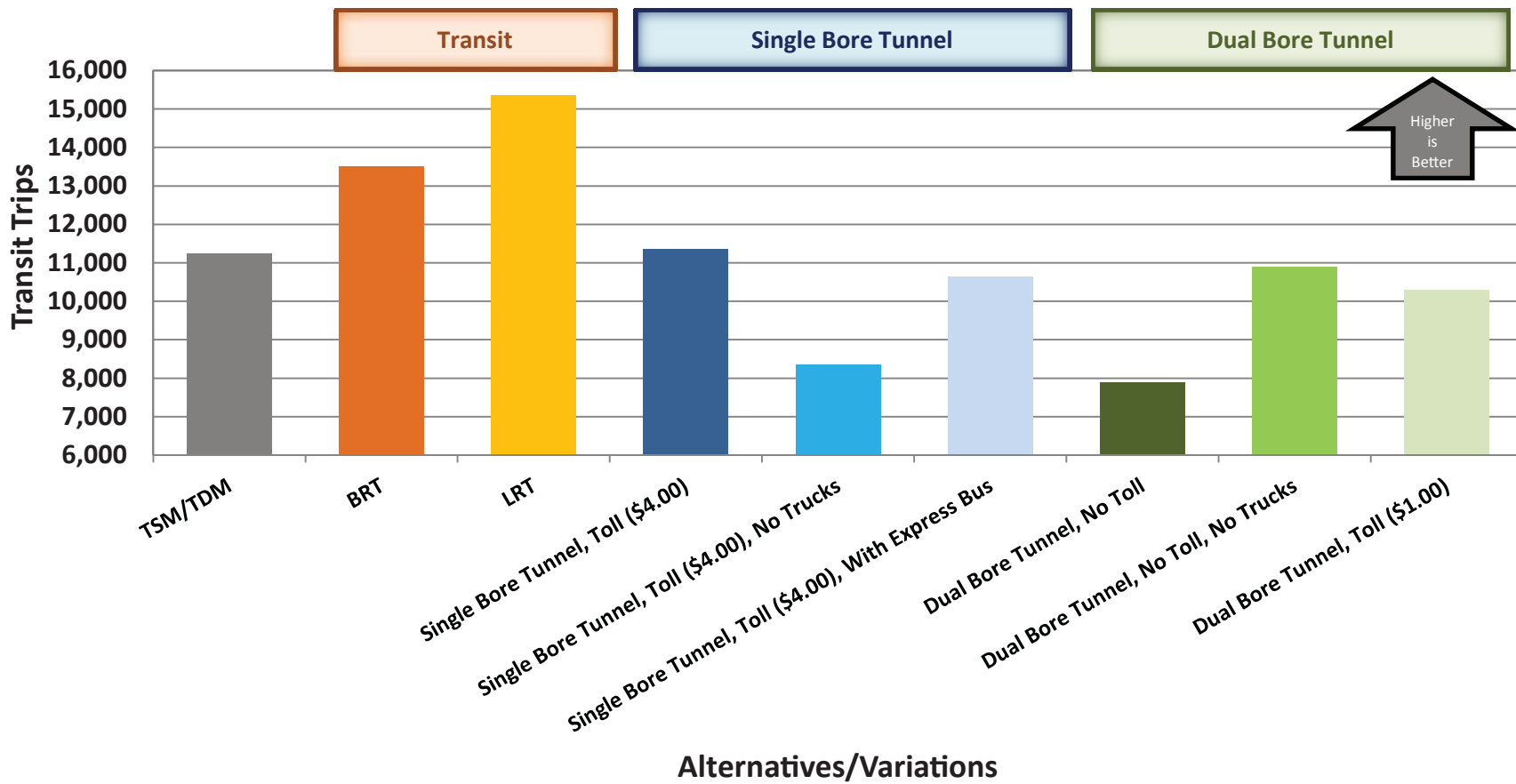


FIGURE 4-30
 Change in Daily Linked Transit Trips Compared to
 No Build Alternative - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

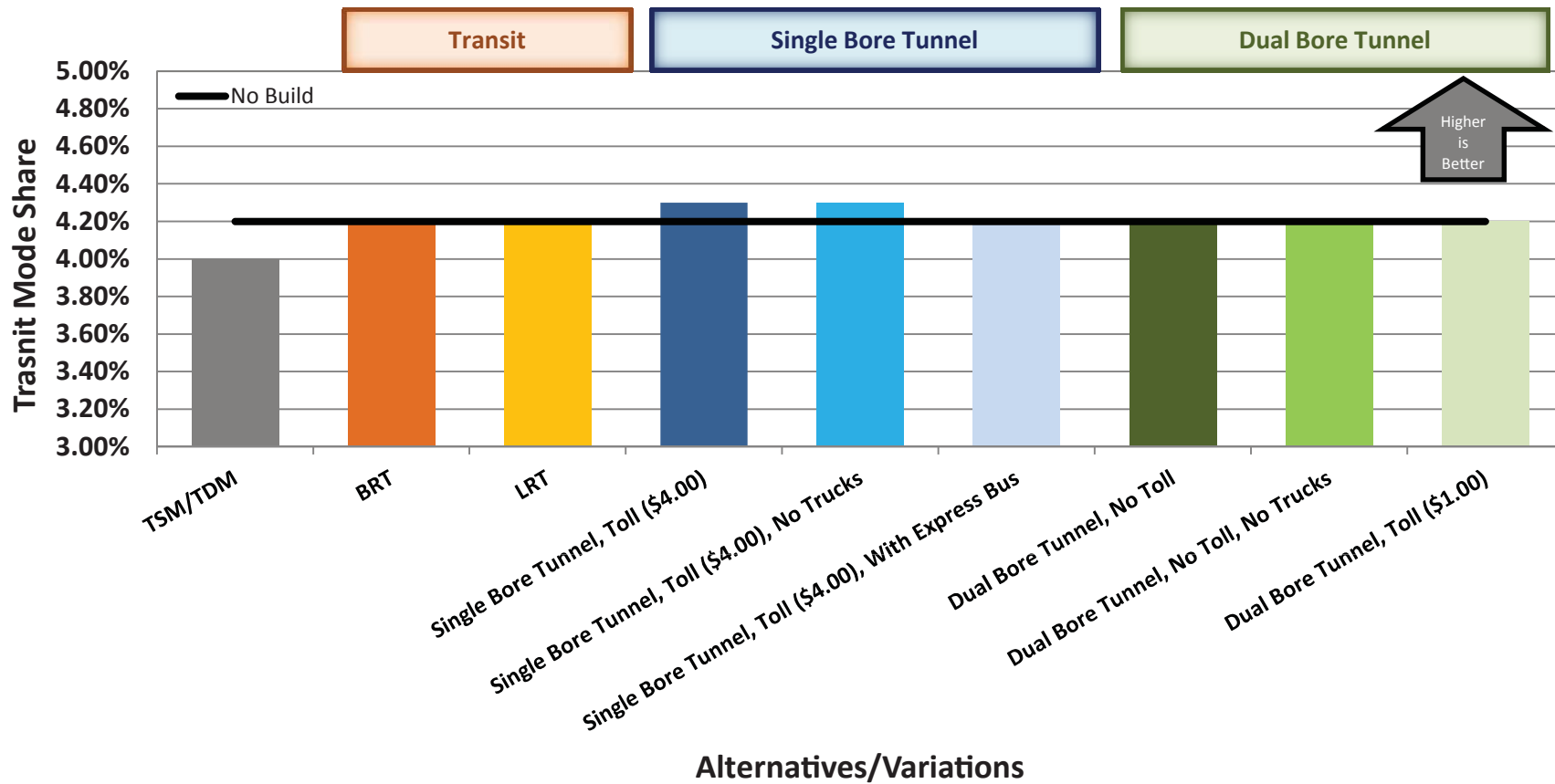


FIGURE 4-31
 Daily Transit Mode Share within the Study Area -
 Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

Number of Person Trips (in 1000s)

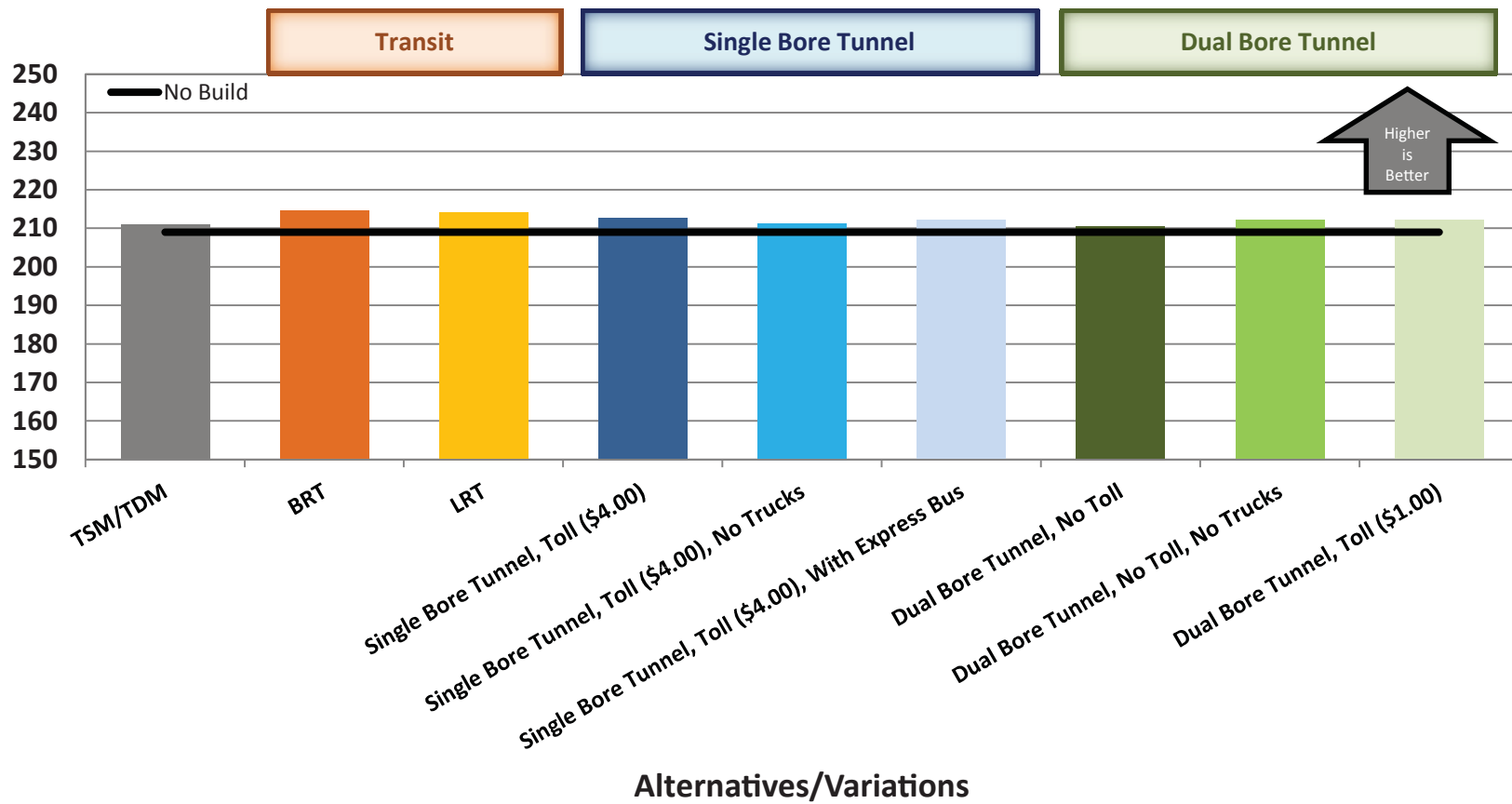


FIGURE 4-32
 Daily Person Travel Crossing the East-West
 Screenline for Transit - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

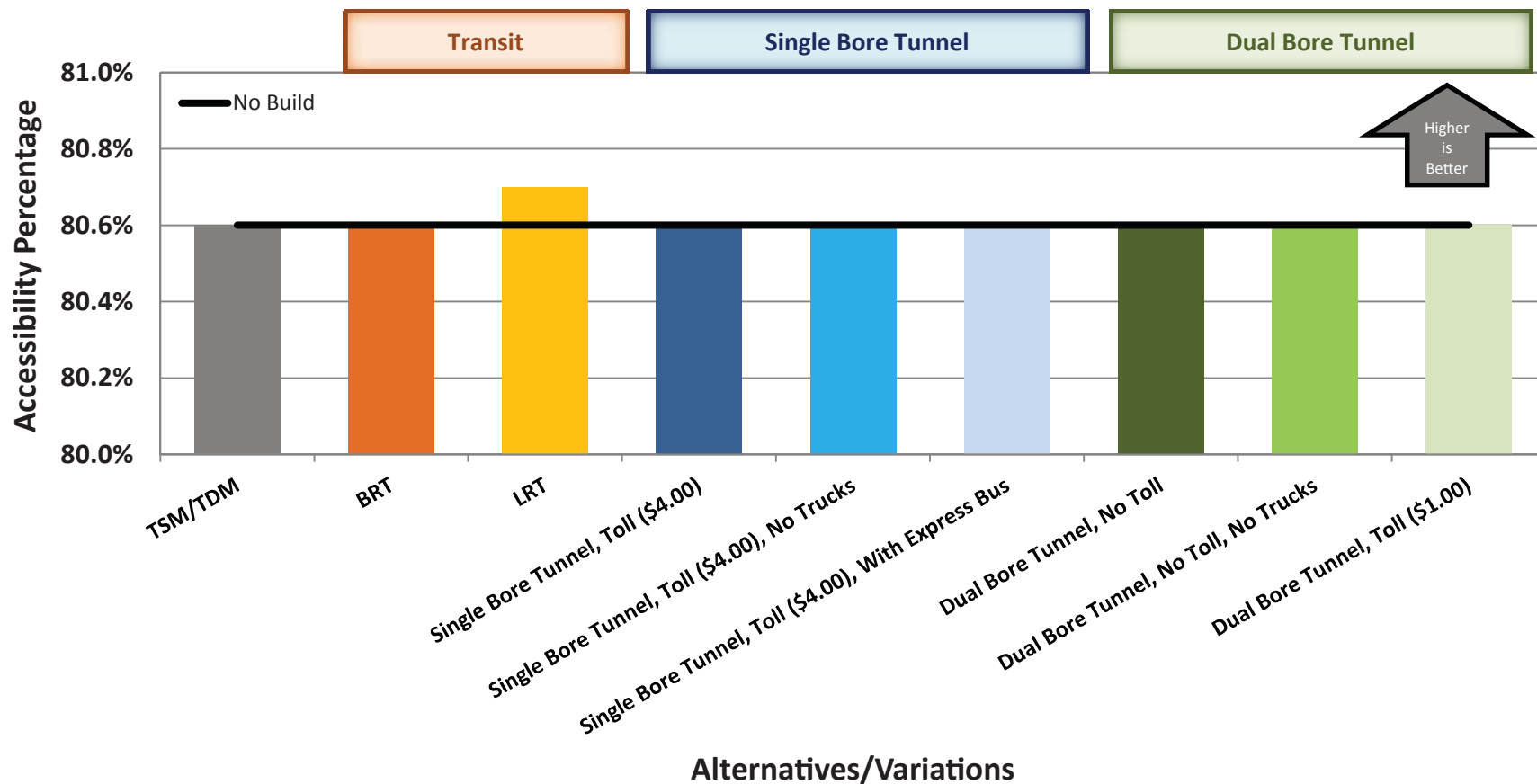


FIGURE 4-33
 Percentage of Population and Employment within 1/4 Mile of
 High Frequency Transit Service - Horizon Year (2035)
 SR 710 North Study
 Los Angeles County, California

Traffic Operations Analysis Results

5.1 Performance Measures and Standards

The traffic operations analysis was focused on LOS analysis. The LOS analysis was conducted using the HCM (2010) techniques (TRB, 2010). The techniques were applied by using Synchro Software (Version 8) and the HCS Version 6.50.

5.1.1 Intersection Operations Analysis

Intersection operations were assessed using the Synchro “HCM 2010 reports” function. The existing condition geometrics/traffic control based on field visits was used for intersection analysis. Intersections with improvements from the build conditions were modified to reflect improvements. Intersections that are closely spaced or are known to be part of a coordinated corridor were coded with optimized, actuated-coordinated traffic signal timing. Isolated intersections were coded with optimized, actuated-uncoordinated traffic signal timing.

The HCM 2010 delay was used to determine LOS, ranging from LOS A to LOS F, using delay ranges summarized in Table 5-1. At four-way stop controlled intersections, the weighted average delay of all four approaches was used to determine the LOS using the ranges listed in Table 5-1. At two-way stop controlled intersections, the average delay of the worst approach was used to determine the worst approach LOS using the ranges listed in Table 5-1.

TABLE 5-1
HCM 2010 Intersection Average Delay Ranges for LOS Criteria
SR 710 North Study, Los Angeles County, California

Signalized Intersections (Seconds per Vehicle)	Unsignalized Intersections (Seconds per Vehicle)	LOS
< 10.0	< 10.0	A
> 10.0 to < 20.0	> 10.0 to < 15.0	B
> 20.0 to < 35.0	> 15.0 to < 25.0	C
> 35.0 to < 55.0	> 25.0 to < 35.0	D
> 55.0 to < 80.0	> 35.0 to < 50.0	E
> 80.0	> 50.0	F

5.1.2 Freeway Operations Analysis

Traffic analysis for the freeway segments was performed using the methodologies in the HCM 2010. The analysis included HCM 2010 assessments of existing and future LOS for the AM and PM peak hours using the HCM 2010 procedures for merge, diverge, weave, and basic sections.

The procedures and analysis criteria in Chapters 11, 12, and 13 of Volume 2 of the HCM 2010 were applied, using a standard methodology to divide a freeway corridor into analysis segments. A new freeway segment was modeled every time a change in volume was encountered (between on- and off-ramps). For segments with lane adds or lane drops, only the segment with fewer lanes (less capacity) was analyzed. Figure 5-1 is an illustration of the freeway segmentation based on the HCM 2010 methodology.

Each segment was analyzed as a basic segment (without considering the impacts of merging/diverging from and to ramps or weaving). In addition, basic segments were analyzed as a merge segment, a diverge segment, and/or a weave segment. The merge, diverge, and weave analyses were considered whenever a segment starts with an on-ramp or ends with an off-ramp:

- Per the HCM 2010, “Freeway merge and diverge segments occur primarily at on-ramp and off-ramp junctions with the freeway mainline . . . Freeway merge and diverge segments include ramp junctions and points where

mainline roadways join or separate.” The tools in the HCM predict “the operating characteristics within a defined ramp influence area” for merge and diverge segments.

- Weaving segments are similar, defined by the HCM as “the crossing of two or more traffic streams traveling in the same direction along a significant length of highway.” Weaving segments always have an on-ramp at the start of the segment and an off-ramp at the end of the segment. They typically have one or more lanes added with the on-ramp, and one or more lanes dropped with the off-ramp.

A segment can be merge/diverge (either or both) or weaving, but not both. The type of segment depends on the configuration of on- and off-ramps and auxiliary lanes. The appropriate analysis was conducted for each segment, and in many cases the LOS of each segment was calculated with more than one methodology. In those cases, the results from the different analyses were compared to determine the controlling geometry for each specific mainline segment (that is, the analysis that indicates the poorest LOS).

The HCS freeway and ramp analysis procedures calculate density based on traffic volumes, number of lanes, length of deceleration/acceleration lanes, types of and distance from downstream/upstream ramps, and free-flow speed at each freeway segment and ramp (merge/diverge) junction.

The HCS weaving segment analysis procedure calculates density based on traffic volumes (weaving and nonweaving), number of lanes, weaving segment length, number of maneuver lanes, and freeway free-flow speed.

The density calculated at each freeway segment, weaving segment, and ramp junction is assigned an LOS ranging from A to F. LOS F occurs when the total demand exceeds the capacity of the segment. The LOS criteria as defined by HCM 2010 are shown in Table 5-2 for freeway segments, weaving segments, and ramp-freeway junctions, with density expressed in passenger car per mile per lane (pc/mi/ln).

TABLE 5-2
HCM 2010 Freeway Segment Density Ranges for LOS Criteria
SR 710 North Study, Los Angeles County, California

LOS	Density (pc/mi/ln)
Basic Segments	
A	0-11
B	> 11-18
C	> 18-26
D	> 26-35
E	> 35-45
F	> 45
Weaving, Diverge, and Merge Segments	
A	≤ 10
B	> 10-20
C	> 20-28
D	> 28-35
E	> 35
F	Demand exceeds capacity

5.2 Existing Year (2013)

5.2.1 Freeway Operations

HCM-based evaluations of the freeway using existing traffic counts and geometry were conducted. The results are presented in four ways:

- Tables 5-3 to 5-24 are summaries of the freeway operations analysis results for the existing year (2013). The tables are organized by freeway, with three separate tables for I-210 (because of the length of that freeway). The tables include data on volume, density, speed, and LOS.
- Figures 5-2 and 5-3 are graphical summaries of the freeway LOS on a map of the study area.
- Appendix B includes schematic summaries of each freeway, with details on geometrics, volumes, and performance.
- Appendix C includes the HCS output reports for the freeway segments.

5.2.2 Intersection Operations

HCM-based evaluations of 156 existing intersections were conducted. The results are presented in four ways:

- Table 5-25 is a summary of the existing conditions intersection operations. The tables include the control type of each intersection and the delay/LOS for the AM and PM peak periods.
- Figures 5-4 and 5-5 are graphical summaries of the intersection LOS on a map of the study area.
- Appendix D is a tabular summary of the turning movement volumes for each intersection. Traffic data were collected in the field on weekdays from March through July 2013.
- Appendix E includes the Synchro output reports for the intersections.

5.3 Opening Year (2020/2025)

Traffic volumes for the opening and horizon year operations analysis were based on the SR 710 North travel demand model (described in Section 4) and field counts. The future traffic data for the opening and horizon year were developed using the travel demand model discussed in Section 4. Traffic demands were generated by extracting the average daily, morning peak period, and evening peak period demands from the existing (2012) and the 2020/2025 travel demand model outputs. The travel demand model outputs were based on 3-hour (AM) and 4-hour (PM) peak period demands. Therefore, factors were applied to convert the peak period demands to peak hour demands. These factors were based on existing field data. In the morning peak period, 38 percent of the 3-hour peak traffic demand was determined to occur between 7:00 and 8:00 AM. In the evening peak period, 27 percent of the 4-hour peak traffic demand was determined to occur between 5:00 and 6:00 PM.

Using the peak hour data, the changes in travel demand from 2012 to 2020/2025 were applied to each freeway segment, ramp, and arterial approach. The future traffic demands were calculated using the following equation:

$$D_{2020/2025} = D_{Existing} + (MD_{2020/2025} - MD_{2012})$$

Where:

$D_{2020/2025}$ = 2020/2025 no build traffic demand

$D_{Existing}$ = 2013 existing traffic demand

$MD_{2020/2025}$ = 2020/2025 no build travel model traffic demand

MD_{2012} = 2012 existing travel model traffic demand

The same process used to develop the 2020/2025 no build conditions was used to determine the traffic demand for all build alternatives. The average daily, morning peak period, and evening peak period demands from the 2020/2025 no build and build travel demand model outputs were extracted. The future traffic demands for the build conditions were calculated using the following equation:

$$D_{2020/2025(B)} = D_{2020/2025} + (MD_{2020/2025(B)} - MD_{2020/2025})$$

Where:

$D_{2020/2025(B)}$ = 2020/2025 build traffic demand

$D_{2020/2025}$ = 2020/2025 no build traffic demand

$MD_{2020/2025(B)}$ = 2020/2025 build travel model traffic demand

$MD_{2020/2025}$ = 2020/2025 no build travel model traffic demand

5.3.1 Freeway Operations by Alternative

Evaluations of the freeway LOS for each alternative for the opening were developed. The results are presented in four ways:

- Tables 5-26 to 5-69 are summaries of the freeway operations analysis results for the alternatives. The tables are organized by freeway, with three separate tables for I-210 (because of the length of that freeway). The tables include data on volume and LOS by alternative for 2020 and 2025.
- Figures 5-6 to 5-27 are graphical summaries of the freeway LOS for each alternative.
- Appendix G provides tables of detailed operations results.
- Appendix C includes the HCS output reports for the freeway segments.

Express Lane operational analysis was conducted for opening year on eastbound and westbound I-10 between I-710 and I-605. Table 5-70 is a summary of the opening year Express Lane volume-to-capacity (V/C) ratio using a base capacity of 2,000 vehicles per hour per lane. This capacity estimate is consistent with the findings of the National Cooperative Highway Research Program 3-96 research results. LOS assessments are based on a standard planning assessment of LOS by V/C ratio: LOS A (0.00 to 0.50), LOS B (0.50 to 0.70), LOS C (0.70 to 0.80), LOS D (0.80 to 0.90), LOS E (0.90 to 1.00), and LOS F (1.00 and above).

The results in Table 5-70 show a wide range of V/C ratios, but the overall performance is expected to be LOS A in 2020 and 2025. The highest V/C ratio (0.47) is for westbound I-10 in the 2025 AM peak period for the Dual-Bore (No Toll) and Dual-Bore (No Toll-No Trucks) variations of the Freeway Tunnel Alternative.

5.3.2 Intersection Operations by Alternative

HCM-based evaluations of 156 intersections for each alternative were conducted. The results are presented in four ways:

- Table 5-71 is a summary of the intersection operations by alternative. The table provides a comparison of the delay/LOS for the 2020 and 2025 AM and PM peak periods.
- Figures 5-28 to 5-49 are graphical summaries of the intersection LOS for each alternative.
- Appendix D is a tabular summary of the turning movement volumes for each intersection.
- Appendix E includes the Synchro output reports for the intersections.

5.4 Horizon Year (2035)

The 2035 No Build freeway and intersection traffic demands were generated by extracting the average daily, morning peak period, and evening peak period demands from the existing (2012) and the 2035 No Build travel demand model outputs. The morning peak period (38 percent) and evening peak period (27 percent) factors were applied as described in Section 5.3.

Using the peak hour data, the changes in travel demand from 2012 to 2035 were applied to each freeway segment, ramp, and arterial approach. The future traffic demands were calculated using the same process and equations presented in Section 5.3 for the no build and build evaluations.

5.4.1 Freeway Operations by Alternative

Evaluations of the freeway LOS for the horizon year alternatives were conducted. The results are presented in five ways:

- Tables 5-72 to 5-115 are summaries of the freeway operations analysis results for the alternatives. The tables are organized by freeway, with three separate tables for I-210 (because of the length of that freeway). The tables include data on volume and LOS by alternative for 2035.
- Figures 5-50 to 5-69 are graphical summaries of the freeway LOS for each alternative.
- Appendix F includes schematic summaries of each freeway, with details on geometrics, volumes, and performance.
- Appendix G provides tables of detailed operations results.
- Appendix C includes the HCS output reports for the freeway segments.

An Express Lane operational analysis was conducted for the horizon year on eastbound and westbound I-10 between I-710 and I-605. Table 5-116 is a summary of the horizon year Express Lane V/C ratio.

The results in the table show a wide range of V/C ratios, but the overall performance is expected to be LOS B or better in 2035. The highest V/C ratio (0.55) is for westbound I-10 in the 2035 AM peak period for the Dual-Bore (No Toll), Dual-Bore (No Toll-No Trucks), and Dual-Bore (Toll) variations of the Freeway Tunnel Alternative.

5.4.2 Intersection Operations by Alternative

HCM-based evaluations of 156 intersections for each alternative were conducted. The results are presented in four ways:

- Table 5-117 is a summary of the intersection operations by alternative. The tables provide a comparison of the delay/LOS for the 2035 AM and PM peak periods.
- Figures 5-70 to 5-89 are graphical summaries of the intersection LOS for each alternative.
- Appendix D is a tabular summary of the turning movement volumes for each intersection.
- Appendix E includes the Synchro output reports for the intersections.

5.5 Summary/Highlights of Traffic Operations Results

Table 5-118 is a comparison of the freeway LOS between the No Build Alternative and existing conditions. Tables 5-119 through 5-127 are similar comparisons between the No Build Alternative and the build alternatives in the opening year. The number of segments that change LOS (for example, from LOS D to LOS C) is indicated. The number of segments that do not change LOS is in the diagonal of the table. Tables 5-128 through 5-136 are similar comparisons between the No Build Alternative and the build alternatives in the horizon year.

Table 5-137 is a summary of freeway LOS for the existing (2013), opening (2020/2025), and horizon (2035) years by alternatives for the AM and PM peak periods. The total number of segments in the study area with the corresponding LOS is indicated.

Table 5-138 is a comparison of the intersection LOS between the No Build Alternative and existing conditions. Tables 5-139 through 5-147 are similar comparisons between the No Build Alternative and the build alternatives in opening year. The number of intersections that change LOS is indicated. Tables 5-148 through 5-156 are similar comparisons between the No Build Alternative and the build alternatives in the horizon year.

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TABLE 5-3
Existing Conditions Freeway Operations Analysis Summary – Eastbound SR 2
SR 710 North Study, Los Angeles County, California

Eastbound State Route 2 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
2EBGP0001	South of I-5 off-ramp	I-5 off-ramp	1400	6.1	N/A	A	3140	13.7	N/A	B
2EBGP0002	I-5 off-ramp	SB I-5 on-ramp	1020	8.0	70.0	A	2290	17.7	70.0	B
2EBGP0003	SB I-5 on-ramp	NB I-5 on-ramp	1270	13.8	51.0	B	2850	22.4	68.7	C
2EBGP0004	NB I-5 on-ramp	Fletcher on-ramp	3190	12.5	70.0	B	7340	31.5	62.9	D
2EBGP0005	Fletcher on-ramp	San Fernando off-ramp	3990	13.5	61.1	B	8460	32.6	55.2	D
2EBGP0006	San Fernando off-ramp	San Fernando on-ramp	3140	12.3	70.0	B	7680	33.9	61.2	D
2EBGP0007	San Fernando on-ramp	Verdugo off-ramp	3650	18.8	48.8	B	8630	*	*	F
2EBGP0008	Verdugo off-ramp	Verdugo on-ramp	3130	12.2	70.0	B	7600	33.3	61.6	D
2EBGP0009	Verdugo on-ramp	York on-ramp	3510	11.0	70.0	A	8010	25.9	66.7	C
2EBGP0010	York on-ramp	Colorado off-ramp	4400	23.5	48.2	C	8680	37.3	47.8	E
2EBGP0011	Colorado off-ramp	SR 134 EB off-ramp	3430	12.0	N/A	B	7390	25.9	N/A	C
2EBGP0012	SR 134 EB off-ramp	SR 134 WB off-ramp	2550	15.8	48.8	B	5430	31.5	47.8	D
2EBGP0013	SR 134 WB off-ramp	Holly off-ramp	2000	12.2	49.1	B	4130	21.4	49.0	C
2EBGP0014	Holly off-ramp	Holly on-ramp	1770	6.9	70.0	A	3800	14.7	70.0	B
2EBGP0015	Holly on-ramp	SR 134 on-ramp	2290	11.4	51.2	B	4510	19.5	50.9	B
2EBGP0016	SR 134 on-ramp	Mountain off-ramp	3580	12.5	60.5	B	7380	*	*	F
2EBGP0017	Mountain off-ramp	Mountain on-ramp	2950	9.2	70.0	A	6500	20.2	69.5	C
2EBGP0018	Mountain on-ramp	Fern Lane Underpass	3210	10.0	70.0	A	6850	21.4	69.1	C
2EBGP0019	Fern Lane Underpass	EB I-210/Verdugo off-ramp	3210	9.4	N/A	A	6850	20.0	N/A	B
2EBGP0020	EB I-210/Verdugo off-ramp	Foothill off-ramp	2360	8.3	N/A	A	4940	17.3	N/A	B
2EBGP0021	Foothill off-ramp	North of Foothill off-ramp	2050	10.7	70.0	A	3650	18.8	69.9	C

TABLE 5-4
Existing Conditions Freeway Operations Analysis Summary – Westbound SR 2
SR 710 North Study, Los Angeles County, California

Westbound State Route 2 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
2WBG0001	North of Foothill on-ramp	Foothill on-ramp	5530	32.4	62.2	D	2220	11.4	70.0	B
2WBG0002	Foothill on-ramp	EB I-210/Verdugo on-ramp	5850	35.7	59.8	E	2800	16.2	51.2	B
2WBG0003	EB I-210/Verdugo on-ramp	Mountain off-ramp	6390	30.2	49.0	D	3630	18.5	49.0	B
2WBG0004	Mountain off-ramp	Mountain on-ramp	6020	24.4	67.7	C	3320	12.8	70.0	B
2WBG0005	Mountain on-ramp	SR 134 off-ramp	6770	24.9	57.8	C	3990	14.1	60.2	B
2WBG0006	SR 134 off-ramp	Holly off-ramp	4170	23.4	48.6	C	2060	14.0	48.8	B
2WBG0007	Holly off-ramp	Holly on-ramp	3490	13.7	70.0	B	1510	5.8	70.0	A
2WBG0008	Holly on-ramp	SR 134 EB on-ramp	3770	15.9	51.1	B	1720	8.5	51.3	A
2WBG0009	SR 134 EB on-ramp	SR 134 WB on-ramp	5210	28.1	49.8	D	2710	17.3	50.8	B
2WBG0010	SR 134 WB on-ramp	Colorado on-ramp	7540	24.4	67.6	C	4220	13.0	70.0	B
2WBG0011	Colorado on-ramp	York off-ramp	8870	*	*	F	5100	19.8	50.8	B
2WBG0012	York off-ramp	Verdugo off-ramp	7730	37.6	48.7	E	4250	22.6	48.9	C
2WBG0013	Verdugo off-ramp	Verdugo on-ramp	7140	30.8	63.4	D	3780	14.6	70.0	B
2WBG0014	Verdugo on-ramp	San Fernando off-ramp	8580	*	*	F	4770	24.5	48.5	C
2WBG0015	San Fernando off-ramp	San Fernando on-ramp	7720	35.1	60.3	E	3990	15.4	70.0	B
2WBG0016	San Fernando on-ramp	Fletcher off-ramp	9160	*	*	F	4820	17.1	60.0	B
2WBG0017	Fletcher off-ramp	I-5 off-ramp	7980	37.2	58.7	E	4170	18.2	N/A	B
2WBG0018	I-5 off-ramp	NB I-5 on-ramp	2570	13.4	70.0	B	1630	8.4	70.0	A
2WBG0019	NB I-5 on-ramp	SB I-5 on-ramp	2710	10.6	70.0	A	1720	6.6	70.0	A
2WBG0020	SB I-5 on-ramp	South of SB I-5 on-ramp	3440	10.8	70.0	A	2200	6.8	70.0	A

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-5
Existing Conditions Freeway Operations Analysis Summary – Eastbound SR 60
SR 710 North Study, Los Angeles County, California

Eastbound State Route 60 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
60EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	3800	12.0	70.0	B	6540	20.5	69.4	C
60EBGP0002	SB I-5 off-ramp	SB I-5/US 101/Soto on-ramp	2280	12.0	70.0	B	4580	24.7	67.5	C
60EBGP0003	SB I-5/US 101/Soto on-ramp	Whittier/Lorena off-ramp	4390	20.2	48.9	C	9360	36.4	48.5	F
60EBGP0004	Whittier/Lorena off-ramp	Lorena on-ramp	3940	12.4	70.0	B	8610	29.0	64.7	D
60EBGP0005	Lorena on-ramp	Indiana on-ramp	4540	17.3	51.0	B	9330	32.9	61.9	D
60EBGP0006	Indiana on-ramp	Downey off-ramp	5120	19.1	59.1	B	10,010	*	*	F
60EBGP0007	Downey off-ramp	Downey/Third on-ramp	4890	15.4	70.0	B	9620	34.6	60.6	D
60EBGP0008	Downey/Third on-ramp	I-710 off-ramp	5410	14.2	70.0	B	10,150	28.3	65.2	D
60EBGP0009	I-710 off-ramp	I-710 on-ramp	4410	17.4	70.0	B	8230	39.1	57.4	E
60EBGP0010	I-710 on-ramp	Atlantic off-ramp	6470	24.6	58.0	C	12,180	*	*	F
60EBGP0011	Atlantic off-ramp	SB Atlantic on-ramp	5560	17.5	70.0	B	10,670	42.1	55.3	E
60EBGP0012	SB Atlantic on-ramp	NB Atlantic on-ramp	5810	15.2	70.0	B	11,170	32.8	62.0	D
60EBGP0013	NB Atlantic on-ramp	Findlay off-ramp	6100	21.7	50.5	C	11,650	*	*	F
60EBGP0014	Findlay off-ramp	Garfield/Wilcox off-ramp	5770	18.2	69.9	C	11,090	*	*	F
60EBGP0015	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	4970	19.6	69.7	C	9780	*	*	F
60EBGP0016	Garfield/Wilcox on-ramp	Paramount off-ramp	5900	18.6	69.9	C	11,270	*	*	F
60EBGP0017	Paramount off-ramp	SB Paramount on-ramp	5180	20.5	69.4	C	10,080	*	*	F
60EBGP0018	SB Paramount on-ramp	NB Paramount on-ramp	5380	21.4	69.1	C	10,400	*	*	F
60EBGP0019	NB Paramount on-ramp	San Gabriel off-ramp	5600	22.6	58.3	C	10,750	*	*	F
60EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	5190	20.6	69.4	C	10,090	*	*	F
60EBGP0021	San Gabriel on-ramp	Rosemead off-ramp	5940	29.4	48.9	D	11,020	*	*	F
60EBGP0022	Rosemead off-ramp	SB Rosemead on-ramp	5500	22.0	68.9	C	10,310	*	*	F
60EBGP0023	SB Rosemead on-ramp	NB Rosemead on-ramp	6220	19.7	69.7	C	11,210	*	*	F
60EBGP0024	NB Rosemead on-ramp	Santa Anita off-ramp	6460	25.4	49.0	C	11,510	*	*	F
60EBGP0025	Santa Anita off-ramp	SB Santa Anita on-ramp	6130	19.4	69.7	C	10,980	44.8	53.5	E
60EBGP0026	SB Santa Anita on-ramp	NB Santa Anita on-ramp	6760	23.5	50.5	C	11,630	*	*	F
60EBGP0027	NB Santa Anita on-ramp	Peck off-ramp	6810	27.3	49.0	C	11,680	*	*	F
60EBGP0028	Peck off-ramp	Peck on-ramp	6440	20.4	69.4	C	11,080	*	*	F
60EBGP0029	Peck on-ramp	I-605 off-ramp	6820	26.1	57.6	C	11,710	*	*	F
60EBGP0030	I-605 off-ramp	SB I-605 on-ramp	4390	17.3	70.0	B	8110	38.1	58.1	E
60EBGP0031	SB I-605 on-ramp	NB I-605 on-ramp	5090	22.9	50.6	C	9450	*	*	F
60EBGP0032	NB I-605 on-ramp	East of NB I-605 on-ramp	6800	17.8	70.0	B	12,750	41.7	55.5	E

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-6
Existing Conditions Freeway Operations Analysis Summary – Westbound SR 60
SR 710 North Study, Los Angeles County, California

Westbound State Route 60 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
60WBG0001	East of I-605 off-ramp	I-605 off-ramp	10,570	42.1	55.2	E	8640	29.2	64.6	D
60WBG0002	I-605 off-ramp	NB I-605 on-ramp	5930	36.9	58.9	E	5100	28.5	65.1	D
60WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	7610	34.5	60.7	D	6470	26.6	66.3	D
60WBG0004	SB I-605 on-ramp	Peck off-ramp	10,010	38.0	48.9	E	7980	31.2	48.9	D
60WBG0005	Peck off-ramp	NB Peck on-ramp	9550	34.7	60.5	D	7540	24.3	67.7	C
60WBG0006	NB Peck on-ramp	SB Peck on-ramp	9870	36.9	59.0	E	7850	25.5	67.0	C
60WBG0007	SB Peck on-ramp	Santa Anita off-ramp	10,200	40.8	48.3	E	8100	33.8	48.3	D
60WBG0008	Santa Anita off-ramp	NB Santa Anita on-ramp	9340	33.4	61.5	D	7240	23.1	68.3	C
60WBG0009	NB Santa Anita on-ramp	SB Santa Anita on-ramp	9390	33.8	61.3	D	7280	23.2	68.3	C
60WBG0010	SB Santa Anita on-ramp	Rosemead off-ramp	9880	41.1	48.0	E	7730	34.0	48.0	D
60WBG0011	Rosemead off-ramp	NB Rosemead on-ramp	8780	30.3	63.8	D	6620	20.9	69.3	C
60WBG0012	NB Rosemead on-ramp	SB Rosemead on-ramp	9020	31.6	62.9	D	6830	21.6	69.0	C
60WBG0013	SB Rosemead on-ramp	San Gabriel off-ramp	9600	40.3	48.0	E	7340	32.3	48.1	D
60WBG0014	San Gabriel off-ramp	San Gabriel on-ramp	8450	28.7	64.9	D	6270	19.6	69.7	C
60WBG0015	San Gabriel on-ramp	Paramount off-ramp	8820	34.4	48.8	D	6570	27.3	48.7	C
60WBG0016	Paramount off-ramp	NB Paramount on-ramp	8310	28.0	65.4	D	6020	18.8	69.9	C
60WBG0017	NB Paramount on-ramp	SB Paramount on-ramp	8850	30.7	63.5	D	6480	22.6	50.5	C
60WBG0018	SB Paramount on-ramp	Garfield/Wilcox off-ramp	9180	32.5	62.2	D	6670	21.0	69.2	C
60WBG0019	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	8020	37.9	58.3	E	5630	22.4	68.7	C
60WBG0020	Garfield/Wilcox on-ramp	Findlay on-ramp	10,230	39.4	57.1	E	6690	21.1	69.2	C
60WBG0021	Findlay on-ramp	Atlantic off-ramp	10,540	*	*	F	6810	26.0	57.4	C
60WBG0022	Atlantic off-ramp	NB Atlantic on-ramp	9870	36.8	59.0	E	6090	19.0	69.8	C
60WBG0023	NB Atlantic on-ramp	SB Atlantic on-ramp	10,380	29.6	64.3	D	6490	16.8	70.0	B
60WBG0024	SB Atlantic on-ramp	I-710 off-ramp	10,780	*	*	F	6890	22.8	50.5	C
60WBG0025	I-710 off-ramp	I-710 on-ramp	8060	26.8	66.2	D	4690	14.6	70.0	B
60WBG0026	I-710 on-ramp	Downey off-ramp	9650	*	*	F	5980	22.5	58.2	C
60WBG0027	Downey off-ramp	Downey/Third on-ramp	9150	32.3	62.3	D	5480	17.1	70.0	B
60WBG0028	Downey/Third on-ramp	Indiana off-ramp	9370	37.4	55.0	E	5720	21.4	58.7	C
60WBG0029	Indiana off-ramp	Whittier/Lorena off-ramp	8970	34.4	48.9	D	5360	23.7	48.8	C
60WBG0030	Whittier/Lorena off-ramp	Lorena on-ramp	8520	29.0	64.7	D	4870	15.2	70.0	B
60WBG0031	Lorena on-ramp	NB I-5/US 101/Soto off-ramp	8780	30.3	63.8	D	5070	16.1	51.1	B
60WBG0032	NB I-5/US 101/Soto off-ramp	NB I-5 on-ramp	5750	*	*	F	2840	22.6	68.6	C
60WBG0033	NB I-5 on-ramp	Soto on-ramp	8570	43.3	54.4	E	5120	20.1	69.5	C
60WBG0034	Soto on-ramp	West of Soto on-ramp	8820	30.5	63.6	D	5320	16.6	70.0	B

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-7
Existing Conditions Freeway Operations Analysis Summary – Northbound SR 110
SR 710 North Study, Los Angeles County, California

Northbound State Route 110 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
110NBGP0001	South of I-5/Riverside off-ramp	I-5/Riverside off-ramp	4670	17.7	70.0	B	7140	29.5	64.3	D
110NBGP0002	I-5/Riverside off-ramp	Figueroa off-ramp	2820	20.0	49.0	C	3910	26.2	48.9	C
110NBGP0003	Figueroa off-ramp	San Fernando on-ramp	2480	12.6	70.0	B	3480	17.6	70.0	B
110NBGP0004	San Fernando on-ramp	I-5/Avenue 26 on-ramp	2540	16.7	50.8	B	3590	22.1	50.5	C
110NBGP0005	I-5/Avenue 26 on-ramp	Avenue 43 off-ramp	3510	24.8	49.1	C	5600	37.1	47.0	E
110NBGP0006	Avenue 43 off-ramp	Avenue 43 on-ramp	3250	16.5	70.0	B	5110	27.6	65.7	D
110NBGP0007	Avenue 43 on-ramp	Avenue 52 off-ramp	3350	24.6	49.0	C	5290	34.4	48.6	D
110NBGP0008	Avenue 52 off-ramp	Avenue 52 on-ramp	2980	15.1	70.0	B	4590	24.0	67.9	C
110NBGP0009	Avenue 52 on-ramp	Via Marisol off-ramp	3090	22.8	49.1	C	4810	31.7	48.8	D
110NBGP0010	Via Marisol off-ramp	Via Marisol on-ramp	2790	14.1	70.0	B	4290	22.1	68.8	C
110NBGP0011	Via Marisol on-ramp	Avenue 60 off-ramp	2850	20.1	49.3	C	4390	28.2	49.2	D
110NBGP0012	Avenue 60 off-ramp	Avenue 60 on-ramp	2730	13.8	70.0	B	4200	21.6	69.0	C
110NBGP0013	Avenue 60 on-ramp	Marmion/Avenue 64 off-ramp	2830	20.4	48.8	C	4370	29.0	48.4	D
110NBGP0014	Marmion/Avenue 64 off-ramp	Bridgewell off-ramp	2320	18.2	49.4	B	3520	24.9	49.3	C
110NBGP0015	Bridgewell off-ramp	Orange Grove off-ramp	2280	19.2	48.7	B	3410	26.3	48.1	C
110NBGP0016	Orange Grove off-ramp	Orange Grove on-ramp	1660	8.4	70.0	A	2340	11.9	70.0	B
110NBGP0017	Orange Grove on-ramp	Fair Oaks off-ramp	1710	15.1	48.7	B	2430	19.8	48.4	B
110NBGP0018	Fair Oaks off-ramp	North of Fair Oaks off-ramp	1130	5.7	70.0	A	1590	8.0	70.0	A

TABLE 5-8
Existing Conditions Freeway Operations Analysis Summary – Southbound SR 110
SR 710 North Study, Los Angeles County, California

Southbound State Route 110 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
110SBGP0001	North of Fair Oaks off-ramp	Fair Oaks off-ramp	1380	5.2	70.0	A	1610	6.1	70.0	A
110SBGP0002	Fair Oaks off-ramp	Fair Oaks on-ramp	1260	9.6	70.0	A	1490	11.3	70.0	B
110SBGP0003	Fair Oaks on-ramp	Orange Grove off-ramp	1860	10.9	61.1	B	1940	11.3	61.1	B
110SBGP0004	Orange Grove off-ramp	Orange Grove on-ramp	1790	13.6	70.0	B	1870	14.2	70.0	B
110SBGP0005	Orange Grove on-ramp	York off-ramp	2980	23.1	49.3	C	2620	21.0	49.3	C
110SBGP0006	York off-ramp	York on-ramp	2860	14.5	70.0	B	2520	12.7	70.0	B
110SBGP0007	York on-ramp	Marmion/Avenue 64 on-ramp	3470	23.0	50.4	C	2720	18.3	50.6	B
110SBGP0008	Marmion/Avenue 64 on-ramp	Avenue 60 off-ramp	4400	30.4	49.1	D	3180	23.8	49.1	C
110SBGP0009	Avenue 60 off-ramp	Avenue 60 on-ramp	4120	21.1	69.2	C	2940	14.9	70.0	B
110SBGP0010	Avenue 60 on-ramp	Via Marisol off-ramp	4990	33.4	49.1	D	3120	23.9	49.0	C
110SBGP0011	Via Marisol off-ramp	Via Marisol on-ramp	4730	24.9	67.4	C	2790	14.1	70.0	B
110SBGP0012	Via Marisol on-ramp	Avenue 52 off-ramp	5390	33.0	49.1	D	3020	21.0	49.1	C
110SBGP0013	Avenue 52 off-ramp	Avenue 52 on-ramp	5150	27.9	65.4	D	2770	14.0	70.0	B
110SBGP0014	Avenue 52 on-ramp	Avenue 43 off-ramp	6430	*	*	F	3250	24.7	49.3	C
110SBGP0015	Avenue 43 off-ramp	Avenue 43 on-ramp	6130	36.8	59.0	E	3100	15.7	70.0	B
110SBGP0016	Avenue 43 on-ramp	I-5 off-ramp	7100	*	*	F	3420	23.7	46.8	C
110SBGP0017	I-5 off-ramp	Avenue 26 off-ramp	4980	32.4	49.1	D	2260	17.4	49.3	B
110SBGP0018	Avenue 26 off-ramp	Figueroa on-ramp	4720	24.9	67.4	C	2140	10.8	70.0	A
110SBGP0019	Figueroa on-ramp	I-5/Riverside on-ramp	5780	33.4	48.3	D	2640	16.4	51.0	B
110SBGP0020	I-5/Riverside on-ramp	South of I-5/Riverside on-ramp	11,150	43.9	54.1	E	5210	15.8	70.0	B

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-9

Existing Conditions Freeway Operations Analysis Summary – Eastbound SR 134

SR 710 North Study, Los Angeles County, California

Eastbound State Route 134 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
134EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	5510	21.4	69.1	C	6310	25.1	67.2	C
134EBGP0002	SB I-5 off-ramp	SB I-5 on-ramp	2960	15.2	70.0	B	3520	17.9	70.0	B
134EBGP0003	SB I-5 on-ramp	NB I-5/Zoo on-ramp	5230	20.2	69.5	C	6540	26.3	66.5	D
134EBGP0004	NB I-5/Zoo on-ramp	San Fernando off-ramp	6340	23.2	58.0	C	8010	30.7	56.1	D
134EBGP0005	San Fernando off-ramp	San Fernando on-ramp	5770	22.6	68.6	C	7470	31.9	62.6	D
134EBGP0006	San Fernando on-ramp	Pacific off-ramp	6230	22.8	58.2	C	7990	30.4	56.4	D
134EBGP0007	Pacific off-ramp	Central/Brand off-ramp	5710	30.7	48.3	D	7360	38.5	48.0	E
134EBGP0008	Central/Brand off-ramp	Pacific on-ramp	4790	18.4	69.9	C	6230	24.7	67.5	C
134EBGP0009	Pacific on-ramp	Brand on-ramp	5510	23.8	50.5	C	7030	29.2	49.6	D
134EBGP0010	Brand on-ramp	Glendale off-ramp	6640	24.5	57.8	C	8320	31.8	56.1	D
134EBGP0011	Glendale off-ramp	SB Glendale on-ramp	5850	23.0	68.4	C	7230	30.3	63.8	D
134EBGP0012	SB Glendale on-ramp	NB Glendale on-ramp	6030	18.5	69.9	C	7440	23.3	68.2	C
134EBGP0013	NB Glendale on-ramp	SR 2 off-ramp	6560	24.1	57.9	C	8080	*	*	F
134EBGP0014	SR 2 off-ramp	Harvey off-ramp	4590	24.2	48.7	C	5710	29.8	48.4	D
134EBGP0015	Harvey off-ramp	Harvey on-ramp	3980	15.3	70.0	B	4880	18.6	69.9	C
134EBGP0016	Harvey on-ramp	SB SR 2 on-ramp	4460	19.1	50.9	B	5450	22.8	50.6	C
134EBGP0017	SB SR 2 on-ramp	NB SR 2 on-ramp	4790	20.2	50.7	C	5850	23.9	50.4	C
134EBGP0018	NB SR 2 on-ramp	Figueroa off-ramp	5970	28.8	48.8	D	7260	35.0	48.6	D
134EBGP0019	Figueroa off-ramp	Figueroa/Colorado on-ramp	5470	21.3	69.2	C	6580	26.5	66.4	D
134EBGP0020	Figueroa/Colorado on-ramp	Linda Vista/San Rafael off-ramp	6380	29.7	49.0	D	7520	35.0	48.9	D
134EBGP0021	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	6050	23.9	67.9	C	7060	29.2	64.5	D
134EBGP0022	Linda Vista/San Rafael on-ramp	Colorado/Orange Grove off-ramp	6460	26.2	48.8	C	7420	29.0	48.5	D
134EBGP0023	Colorado/Orange Grove off-ramp	I-210 off-ramp	5940	20.8	N/A	C	6700	23.5	N/A	C
134EBGP0024	I-210 off-ramp	Orange Grove on-ramp	5060	19.5	69.7	C	5640	21.9	68.9	C
134EBGP0025	Orange Grove on-ramp	Fair Oaks/Marengo off-ramp	5440	19.6	59.0	B	6030	22.2	58.3	C
134EBGP0026	Fair Oaks/Marengo off-ramp	NB SR 710 on-ramp	4740	18.2	69.9	C	5110	19.6	69.7	C
134EBGP0027	NB SR 710 on-ramp	East of NB SR 710 on-ramp	5370	16.5	70.0	B	5870	17.9	70.0	B

TABLE 5-10

Existing Conditions Freeway Operations Analysis Summary – Westbound SR 134

SR 710 North Study, Los Angeles County, California

Westbound State Route 134 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
134WBG0001	East of SR 710 off-ramp	SR 710 off-ramp	6140	21.5	N/A	C	6570	23.0	N/A	C
134WBG0002	SR 710 off-ramp	Fair Oaks on-ramp	4990	19.2	69.8	C	5580	21.6	69.0	C
134WBG0003	Fair Oaks on-ramp	Orange Grove off-ramp	5700	20.7	58.7	C	6310	23.4	58.0	C
134WBG0004	Orange Grove off-ramp	I-210/SR 710 on-ramp	5380	20.9	69.3	C	5900	23.1	68.4	C
134WBG0005	I-210/SR 710 on-ramp	Colorado/Orange Grove on-ramp	6910	21.5	69.1	C	7210	22.4	68.7	C
134WBG0006	Colorado/Orange Grove on-ramp	Linda Vista/San Rafael off-ramp	7510	27.0	49.1	C	7880	29.1	48.9	D
134WBG0007	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	7220	30.5	63.7	D	7420	31.5	62.9	D
134WBG0008	Linda Vista/San Rafael on-ramp	Figueroa/Colorado off-ramp	7430	36.1	48.4	E	7650	39.2	47.9	E
134WBG0009	Figueroa/Colorado off-ramp	Figueroa on-ramp	6640	27.0	66.1	D	6430	25.7	66.9	C
134WBG0010	Figueroa on-ramp	SR 2 off-ramp	7100	29.7	64.2	D	6860	28.0	65.4	D
134WBG0011	SR 2 off-ramp	Harvey off-ramp	5350	26.5	48.9	C	5350	28.0	48.5	C
134WBG0012	Harvey off-ramp	NB SR 2 on-ramp	4920	18.9	69.8	C	4630	17.7	70.0	B
134WBG0013	NB SR 2 on-ramp	Harvey on-ramp	5700	23.7	50.5	C	5300	21.8	50.7	C
134WBG0014	Harvey on-ramp	SB SR 2 on-ramp	6690	27.3	65.9	D	6000	24.3	50.4	C
134WBG0015	SB SR 2 on-ramp	Glendale off-ramp	8360	31.5	56.4	D	7330	*	*	F
134WBG0016	Glendale off-ramp	Glendale on-ramp	7810	34.6	60.7	D	6240	24.7	67.4	C
134WBG0017	Glendale on-ramp	Brand/Central off-ramp	8800	33.6	55.7	D	7270	*	*	F
134WBG0018	Brand/Central off-ramp	Pacific off-ramp	7810	36.6	48.8	E	5840	29.1	48.7	D
134WBG0019	Pacific off-ramp	Central on-ramp	7310	31.1	63.2	D	5250	20.2	69.5	C
134WBG0020	Central on-ramp	Pacific on-ramp	8230	38.0	58.1	E	6840	32.5	48.6	D
134WBG0021	Pacific on-ramp	San Fernando off-ramp	8930	34.0	55.9	D	7530	28.9	48.9	D
134WBG0022	San Fernando off-ramp	I-5 off-ramp	8370	27.3	65.8	D	7100	22.1	68.8	C
134WBG0023	I-5 off-ramp	San Fernando on-ramp	4310	41.6	55.6	E	3690	31.3	63.1	D
134WBG0024	San Fernando on-ramp	NB I-5 on-ramp	4690	*	*	F	4060	36.7	59.1	E
134WBG0025	NB I-5 on-ramp	West of NB I-5 on-ramp	7720	33.9	61.2	D	6510	26.1	66.6	D

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues,

so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-11

Existing Conditions Freeway Operations Analysis Summary – Northbound I-5
SR 710 North Study, Los Angeles County, California

Northbound Interstate 5 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
5NBGP0001	South of Eastern off-ramp	Eastern off-ramp	8600	32.1	49.2	D	9630	35.8	49.2	E
5NBGP0002	Eastern off-ramp	I-710 off-ramp	8430	28.6	65.0	D	9410	33.3	61.6	D
5NBGP0003	I-710 off-ramp	I-710 on-ramp	7080	30.7	63.5	D	7850	35.8	59.8	E
5NBGP0004	I-710 on-ramp	Downey on-ramp	10,480	41.4	55.8	E	9990	37.0	58.9	E
5NBGP0005	Downey on-ramp	Indiana off-ramp	10,800	*	*	F	10,210	38.5	57.8	E
5NBGP0006	Indiana off-ramp	Indiana on-ramp	10,600	42.4	55.1	E	9880	36.3	59.4	E
5NBGP0007	Indiana on-ramp	Calzona off-ramp	10,840	*	*	F	10,050	37.4	58.6	E
5NBGP0008	Calzona off-ramp	Calzona on-ramp	10,790	44.0	54.0	E	9950	36.7	59.1	E
5NBGP0009	Calzona on-ramp	Grand Vista off-ramp	10,920	*	*	F	10,040	37.3	58.7	E
5NBGP0010	Grand Vista off-ramp	US 101 NB off-ramp	10,760	43.8	54.1	E	9750	35.4	60.1	E
5NBGP0011	US 101 NB off-ramp	I-10 WB off-ramp	6820	29.0	64.7	D	7810	35.5	60.0	E
5NBGP0012	I-10 WB off-ramp	Soto off-ramp	4000	40.4	49.2	E	5530	*	*	F
5NBGP0013	Soto off-ramp	SR 60 WB on-ramp	3840	35.1	60.3	E	5330	*	*	F
5NBGP0014	SR 60 WB on-ramp	Seventh off-ramp	5050	*	*	F	6340	*	*	F
5NBGP0015	Seventh off-ramp	Seventh on-ramp	4920	*	*	F	6130	*	*	F
5NBGP0016	Seventh on-ramp	I-10 EB on-ramp	5460	*	*	F	6740	*	*	F
5NBGP0017	I-10 EB on-ramp	Fourth off-ramp	9600	35.4	49.2	E	10,150	38.1	58.1	E
5NBGP0018	Fourth off-ramp	Fourth on-ramp	9400	33.8	61.2	D	9900	36.4	59.3	E
5NBGP0019	Fourth on-ramp	Cesar Chavez off-ramp	9950	37.4	58.6	E	10,510	*	*	F
5NBGP0020	Cesar Chavez off-ramp	I-10 EB off-ramp	9550	34.8	60.5	D	10,020	37.2	58.7	E
5NBGP0021	I-10 EB off-ramp	State on-ramp	7520	33.8	61.2	D	8320	39.9	56.8	E
5NBGP0022	State on-ramp	I-10 WB on-ramp	7800	36.0	59.6	E	8670	*	*	F
5NBGP0023	I-10 WB on-ramp	Marengo on-ramp	10,170	39.0	57.5	E	10,390	39.9	56.8	E
5NBGP0024	Marengo on-ramp	Main Street off-ramp	10,520	*	*	F	10,970	*	*	F
5NBGP0025	Main Street off-ramp	Broadway off-ramp	10,110	38.5	57.8	E	10,580	41.3	55.8	E
5NBGP0026	Broadway off-ramp	SR 110 NB off-ramp	9540	*	*	F	10,040	*	*	F
5NBGP0027	SR 110 NB off-ramp	Pasadena/Broadway on-ramp	8230	39.8	56.8	E	9060	*	*	F
5NBGP0028	Pasadena/Broadway on-ramp	SR 110 SB on-ramp	8660	*	*	F	9910	*	*	F
5NBGP0029	SR 110 SB on-ramp	Riverside/SR 110 NB on-ramp	8960	*	*	F	10,200	*	*	F
5NBGP0030	Riverside/SR 110 NB on-ramp	Stadium Way off-ramp	11,040	*	*	F	12,550	*	*	F
5NBGP0031	Stadium Way off-ramp	Stadium Way on-ramp	10,800	44.2	53.9	E	12,210	*	*	F
5NBGP0032	Stadium Way on-ramp	SR 2 NB off-ramp	10,940	*	*	F	12,740	*	*	F
5NBGP0033	SR 2 NB off-ramp	SR 2 SB off-ramp	9030	*	*	F	8250	*	*	F
5NBGP0034	SR 2 SB off-ramp	SR 2 on-ramp	8890	*	*	F	8160	38.5	57.8	E
5NBGP0035	SR 2 on-ramp	Fletcher on-ramp	9630	35.3	60.2	E	8850	30.2	63.8	D
5NBGP0036	Fletcher on-ramp	Glendale off-ramp	9960	*	*	F	9250	36.7	55.0	E
5NBGP0037	Glendale off-ramp	Glendale on-ramp	9010	*	*	F	8330	40.1	56.7	E
5NBGP0038	Glendale on-ramp	Los Feliz off-ramp	9230	37.0	54.9	E	8590	33.6	55.7	D
5NBGP0039	Los Feliz off-ramp	Crystal Springs off-ramp	7980	37.5	58.5	E	7760	35.1	60.3	E
5NBGP0040	Crystal Springs off-ramp	Los Feliz on-ramp	7930	37.1	58.8	E	7690	34.6	60.7	D
5NBGP0041	Los Feliz on-ramp	Colorado off-ramp	8840	33.4	48.7	D	8780	33.9	48.5	D
5NBGP0042	Colorado off-ramp	Colorado on-ramp	8250	27.7	65.6	D	8060	26.5	66.4	D
5NBGP0043	Colorado on-ramp	SR 134 EB/Zoo off-ramp	9000	35.8	55.4	E	9440	*	*	F
5NBGP0044	SR 134 EB/Zoo off-ramp	SR 134 WB off-ramp	8060	28.2	N/A	D	8370	29.3	N/A	D
5NBGP0045	SR 134 WB off-ramp	SR 134 WB on-ramp	5030	19.9	69.6	C	5910	23.7	68.0	C
5NBGP0046	SR 134 WB on-ramp	Western off-ramp	7550	*	*	F	8660	*	*	F
5NBGP0047	Western off-ramp	Western on-ramp	6910	29.6	64.3	D	7940	36.5	59.2	E
5NBGP0048	Western on-ramp	North of Western on-ramp	7280	23.5	68.1	C	8910	30.5	63.6	D

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-12

Existing Conditions Freeway Operations Analysis Summary – Southbound I-5
SR 710 North Study, Los Angeles County, California

Southbound Interstate 5 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
5SBGP0001	North of Western off-ramp	Western off-ramp	8310	28.0	65.4	D	8350	27.8	65.5	D
5SBGP0002	Western off-ramp	Western on-ramp	7540	34.0	61.1	D	7600	33.9	61.2	D
5SBGP0003	Western on-ramp	SR 134 EB off-ramp	8540	*	*	F	8470	*	*	F
5SBGP0004	SR 134 EB off-ramp	SR 134 EB on-ramp	6270	25.8	66.8	C	5450	21.5	69.1	C
5SBGP0005	SR 134 EB on-ramp	SR 134 WB/Fairmont on-ramp	8810	23.8	68.0	C	8240	21.7	69.0	C
5SBGP0006	SR 134 WB/Fairmont on-ramp	Zoo on-ramp	9610	33.2	48.8	D	8930	30.0	49.6	D
5SBGP0007	Zoo on-ramp	Colorado off-ramp	9680	39.0	54.6	E	9130	36.1	55.2	E
5SBGP0008	Colorado off-ramp	Colorado on-ramp	8870	30.8	63.4	D	7910	25.8	66.8	C
5SBGP0009	Colorado on-ramp	Los Feliz off-ramp	9440	34.0	61.1	D	8650	29.2	64.5	D
5SBGP0010	Los Feliz off-ramp	Crystal Springs/Los Feliz on-ra	8060	38.3	58.0	E	6770	28.3	65.2	D
5SBGP0011	Crystal Springs/Los Feliz on-ra	Glendale off-ramp	8310	32.6	56.0	D	7230	28.1	49.0	D
5SBGP0012	Glendale off-ramp	Glendale on-ramp	8080	26.9	66.1	D	6920	21.9	68.9	C
5SBGP0013	Glendale on-ramp	Fletcher off-ramp	8600	32.2	49.0	D	7880	29.4	49.1	D
5SBGP0014	Fletcher off-ramp	SR 2 off-ramp	8240	27.6	65.6	D	7600	24.5	67.6	C
5SBGP0015	SR 2 off-ramp	Stadium Way off-ramp	7550	34.0	61.1	D	7010	29.8	64.2	D
5SBGP0016	Stadium Way off-ramp	SR 2 on-ramp	6390	42.7	54.8	E	6100	38.3	58.0	E
5SBGP0017	SR 2 on-ramp	Stadium Way on-ramp	10,190	39.1	57.4	E	9470	33.7	61.3	D
5SBGP0018	Stadium Way on-ramp	Riverside/SR 110 SB off-ramp	10,410	*	*	F	9650	38.3	54.9	E
5SBGP0019	Riverside/SR 110 SB off-ramp	Riverside on-ramp	7990	37.7	58.4	E	7550	33.5	61.4	D
5SBGP0020	Riverside on-ramp	Avenue 21/SR 110 NB off-ramp	8350	33.0	55.6	D	7670	29.5	56.6	D
5SBGP0021	Avenue 21/SR 110 NB off-ram	Avenue 21/SR 110 SB on-ramp	8050	*	*	F	7420	*	*	F
5SBGP0022	Avenue 21/SR 110 SB on-ramp	Main off-ramp	8770	*	*	F	7790	38.8	54.8	E
5SBGP0023	Main off-ramp	Broadway on-ramp	8540	43.1	54.6	E	7610	34.0	61.1	D
5SBGP0024	Broadway on-ramp	Mission off-ramp	9890	*	*	F	8070	37.7	58.4	E
5SBGP0025	Mission off-ramp	I-10 EB off-ramp	9490	*	*	F	7760	35.1	60.3	E
5SBGP0026	I-10 EB off-ramp	Mission on-ramp	7590	34.3	60.8	D	6050	24.4	67.7	C
5SBGP0027	Mission on-ramp	I-10 WB on-ramp	7870	36.6	59.2	E	6280	25.5	67.0	C
5SBGP0028	I-10 WB on-ramp	Cesar Chavez on-ramp	9880	36.9	59.0	E	9070	31.4	63.0	D
5SBGP0029	Cesar Chavez on-ramp	Fourth off-ramp	10,260	*	*	F	9420	34.1	49.1	D
5SBGP0030	Fourth off-ramp	Fourth on-ramp	9800	36.4	59.3	E	9130	31.7	62.7	D
5SBGP0031	Fourth on-ramp	I-10 WB off-ramp	10,090	38.4	57.9	E	9420	33.4	61.5	D
5SBGP0032	I-10 WB off-ramp	SR 60 EB off-ramp	7050	*	*	F	7790	*	*	F
5SBGP0033	SR 60 EB off-ramp	Soto off-ramp	4200	*	*	F	5830	*	*	F
5SBGP0034	Soto off-ramp	Seventh on-ramp	3760	33.8	61.2	D	5540	*	*	F
5SBGP0035	Seventh on-ramp	Eight on-ramp	3910	37.4	47.1	E	5690	*	*	F
5SBGP0036	Eight on-ramp	SR 60 EB on-ramp	4090	*	*	F	5850	*	*	F
5SBGP0037	SR 60 EB on-ramp	US 101 SB on-ramp	5870	36.2	59.4	E	8010	*	*	F
5SBGP0038	US 101 SB on-ramp	Lorena on-ramp	8690	29.9	64.1	D	11,430	*	*	F
5SBGP0039	Lorena on-ramp	Indiana off-ramp	8780	30.8	49.1	D	11,510	*	*	F
5SBGP0040	Indiana off-ramp	Indiana on-ramp	8520	29.0	64.7	D	11,330	*	*	F
5SBGP0041	Indiana on-ramp	Ditman off-ramp	8780	32.7	49.3	D	11,600	*	*	F
5SBGP0042	Ditman off-ramp	Ditman on-ramp	8680	29.8	64.1	D	11,530	*	*	F
5SBGP0043	Ditman on-ramp	Olympic off-ramp	8800	32.2	49.2	D	11,640	*	*	F
5SBGP0044	Olympic off-ramp	I-710 SB off-ramp	8620	29.5	64.3	D	11,510	*	*	F
5SBGP0045	I-710 SB off-ramp	I-710 SB on-ramp	6890	*	*	F	9240	*	*	F
5SBGP0046	I-710 SB on-ramp	South of I-710 SB on-ramp	8600	43.7	54.2	E	11,480	*	*	F

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-13

Existing Conditions Freeway Operations Analysis Summary – Eastbound I-10
SR 710 North Study, Los Angeles County, California

Eastbound Interstate 10 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
10EBGP0001	East of SB I-5 on-ramp	SB I-5 on-ramp	1550	8.0	70.0	A	1390	7.1	70.0	A
10EBGP0002	SB I-5 on-ramp	EB I-10/NB I-5 on-ramp	3590	13.9	70.0	B	4910	19.0	69.8	C
10EBGP0003	EB I-10/NB I-5 on-ramp	Soto/Marengo on-ramp	5900	15.2	70.0	B	8900	23.5	68.1	C
10EBGP0004	Soto/Marengo on-ramp	City Terrace off-ramp	6830	27.2	48.9	C	9990	37.9	48.8	E
10EBGP0005	City Terrace off-ramp	Eastern off-ramp	6420	28.0	48.7	D	9500	37.4	48.5	E
10EBGP0006	Eastern off-ramp	I-710 off-ramp	5810	15.0	70.0	B	8770	23.1	68.3	C
10EBGP0007	I-710 off-ramp	Eastern on-ramp	4110	15.9	70.0	B	6610	27.0	66.0	D
10EBGP0008	Eastern on-ramp	I-710 on-ramp	4530	20.4	50.7	C	7080	29.8	64.2	D
10EBGP0009	I-710 on-ramp	Fremont off-ramp	5980	29.4	48.7	D	9640	*	*	F
10EBGP0010	Fremont off-ramp	Fremont on-ramp	5430	21.2	69.2	C	8860	44.2	53.8	E
10EBGP0011	Fremont on-ramp	Atlantic off-ramp	6040	29.0	48.6	D	9590	*	*	F
10EBGP0012	Atlantic off-ramp	Atlantic on-ramp	5340	20.8	69.3	C	8740	43.0	54.7	E
10EBGP0013	Atlantic on-ramp	Garfield off-ramp	5900	27.7	48.8	C	9720	*	*	F
10EBGP0014	Garfield off-ramp	Garfield on-ramp	5370	20.9	69.3	C	8910	44.7	53.5	E
10EBGP0015	Garfield on-ramp	New off-ramp	6150	26.0	50.2	C	10,070	*	*	F
10EBGP0016	New off-ramp	New on-ramp	5810	22.9	68.4	C	9480	*	*	F
10EBGP0017	New on-ramp	Del Mar off-ramp	6470	30.4	49.1	D	10,220	*	*	F
10EBGP0018	Del Mar off-ramp	Del Mar on-ramp	6170	24.7	67.5	C	9660	*	*	F
10EBGP0019	Del Mar on-ramp	San Gabriel off-ramp	6620	30.2	48.9	D	10,240	*	*	F
10EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	6210	24.9	67.4	C	9460	*	*	F
10EBGP0021	San Gabriel on-ramp	Walnut Grove off-ramp	6560	28.1	49.2	D	9920	*	*	F
10EBGP0022	Walnut Grove off-ramp	Walnut Grove on-ramp	6400	25.9	66.8	C	9600	*	*	F
10EBGP0023	Walnut Grove on-ramp	Rosemead off-ramp	6620	31.7	48.2	D	9850	*	*	F
10EBGP0024	Rosemead off-ramp	Rosemead on-ramp	5660	22.2	68.7	C	8100	36.9	59.0	E
10EBGP0025	Rosemead on-ramp	Baldwin off-ramp	6270	30.6	48.7	D	9080	*	*	F
10EBGP0026	Baldwin off-ramp	Baldwin on-ramp	5690	22.4	68.7	C	8080	36.7	59.1	E
10EBGP0027	Baldwin on-ramp	Santa Anita off-ramp	6490	24.2	57.9	C	9060	35.3	55.5	E
10EBGP0028	Santa Anita off-ramp	Santa Anita on-ramp	5900	23.3	68.2	C	7940	35.6	59.9	E
10EBGP0029	Santa Anita on-ramp	SB Peck off-ramp	6400	24.8	49.2	C	8630	33.4	55.8	D
10EBGP0030	SB Peck off-ramp	NB Peck off-ramp	6210	19.2	69.8	C	8280	26.9	66.1	D
10EBGP0031	NB Peck off-ramp	Peck/Valley on-ramp	5820	23.0	68.4	C	7580	32.9	61.9	D
10EBGP0032	Peck/Valley on-ramp	N Peck on-ramp	6150	24.6	67.5	C	7940	35.6	59.9	E
10EBGP0033	N Peck on-ramp	Garvey/Durfee on-ramp	6390	25.8	66.8	C	8210	37.8	58.3	E
10EBGP0034	Garvey/Durfee on-ramp	SB I-605 off-ramp	6900	26.0	57.2	C	8940	35.1	55.0	E
10EBGP0035	SB I-605 off-ramp	NB I-605 off-ramp	6060	33.5	47.9	D	7550	*	*	F
10EBGP0036	NB I-605 off-ramp	I-605 on-ramp	4850	18.7	69.9	C	5550	21.6	69.0	C
10EBGP0037	I-605 on-ramp	West of I-605 on-ramp	7200	18.5	69.9	C	9440	25.2	67.2	C

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-14

Existing Conditions Freeway Operations Analysis Summary – Westbound I-10
SR 710 North Study, Los Angeles County, California

Westbound Interstate 10 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
10WBG0001	East of I-605 off-ramp	I-605 off-ramp	8700	22.9	68.4	C	6900	20.1	N/A	C
10WBG0002	I-605 off-ramp	NB I-605 on-ramp	5800	17.9	70.0	B	4120	12.6	70.0	B
10WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	6950	27.1	50.0	C	5220	22.7	50.5	C
10WBG0004	SB I-605 on-ramp	Garvey/Durfee off-ramp	8550	*	*	F	6760	*	*	F
10WBG0005	Garvey/Durfee off-ramp	NB Peck off-ramp	7720	34.2	60.9	D	5970	26.7	49.1	C
10WBG0006	NB Peck off-ramp	Valley off-ramp	7420	32.0	62.5	D	5700	22.3	68.7	C
10WBG0007	Valley off-ramp	Valley on-ramp	7270	22.9	68.4	C	5620	17.2	70.0	B
10WBG0008	Valley on-ramp	SB Peck off-ramp	7540	28.1	57.0	D	6000	21.9	58.5	C
10WBG0009	SB Peck off-ramp	Peck on-ramp	7400	23.4	68.2	C	5880	18.0	70.0	C
10WBG0010	Peck on-ramp	Santa Anita off-ramp	7760	24.9	67.4	C	6390	21.2	50.7	C
10WBG0011	Santa Anita off-ramp	Santa Anita on-ramp	6960	29.1	64.6	D	5680	22.2	68.8	C
10WBG0012	Santa Anita on-ramp	Temple City off-ramp	8000	39.5	48.4	E	6660	34.6	48.3	D
10WBG0013	Temple City off-ramp	Temple City on-ramp	7180	30.4	63.7	D	5730	22.4	68.7	C
10WBG0014	Temple City on-ramp	Rosemead off-ramp	8180	38.4	48.4	E	6680	32.0	48.5	D
10WBG0015	Rosemead off-ramp	Rosemead on-ramp	7390	31.9	62.7	D	5960	23.5	68.1	C
10WBG0016	Rosemead on-ramp	Walnut Grove off-ramp	8590	*	*	F	7070	30.1	49.3	D
10WBG0017	Walnut Grove off-ramp	Walnut Grove on-ramp	8320	39.2	57.3	E	6780	27.8	65.5	D
10WBG0018	Walnut Grove on-ramp	San Gabriel off-ramp	8790	*	*	F	7210	31.0	48.6	D
10WBG0019	San Gabriel off-ramp	San Gabriel on-ramp	8230	38.3	57.9	E	6570	26.6	66.3	D
10WBG0020	San Gabriel on-ramp	Del Mar off-ramp	8910	*	*	F	7130	34.6	48.6	D
10WBG0021	Del Mar off-ramp	NB Del Mar on-ramp	8260	38.6	57.7	E	6500	26.3	66.5	D
10WBG0022	NB Del Mar on-ramp	SB Del Mar on-ramp	8480	*	*	F	6660	27.1	66.0	D
10WBG0023	SB Del Mar on-ramp	New off-ramp	8800	33.7	55.6	D	6890	25.5	57.5	C
10WBG0024	New off-ramp	New on-ramp	7970	36.2	59.5	E	6030	23.8	68.0	C
10WBG0025	New on-ramp	Garfield off-ramp	8370	*	*	F	6280	31.7	48.4	D
10WBG0026	Garfield off-ramp	Garfield on-ramp	7460	32.3	62.3	D	5460	21.2	69.2	C
10WBG0027	Garfield on-ramp	Atlantic off-ramp	8390	39.8	56.8	E	5990	30.2	48.3	D
10WBG0028	Atlantic off-ramp	Atlantic on-ramp	7490	32.5	62.2	D	5070	19.5	69.7	C
10WBG0029	Atlantic on-ramp	Fremont off-ramp	8310	39.1	57.4	E	5560	27.0	48.7	C
10WBG0030	Fremont off-ramp	Fremont on-ramp	7700	34.0	61.1	D	4950	19.0	69.8	C
10WBG0031	Fremont on-ramp	I-710/Eastern off-ramp	8400	*	*	F	5280	23.1	N/A	C
10WBG0032	I-710/Eastern off-ramp	Campus on-ramp	4920	26.9	66.1	D	3370	17.3	70.0	B
10WBG0033	Campus on-ramp	I-710 on-ramp	6050	27.7	49.9	C	4070	18.9	50.9	B
10WBG0034	I-710 on-ramp	Herbert on-ramp	7850	20.4	69.4	C	6090	15.7	70.0	B
10WBG0035	Herbert on-ramp	Soto off-ramp	8510	33.9	48.4	D	6520	28.1	48.2	D
10WBG0036	Soto off-ramp	WB I-10/SB I-5 off-ramp	7680	20.0	69.6	C	5560	14.3	70.0	B
10WBG0037	WB I-10/SB I-5 off-ramp	NB I-5 off-ramp	5200	22.8	N/A	C	3660	16.0	N/A	B
10WBG0038	NB I-5 off-ramp	West of NB I-5 off-ramp	2830	14.6	70.0	B	1720	8.8	70.0	A

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-15

Existing Conditions Freeway Operations Analysis Summary – Eastbound I-210 (I-5 to SR 2)
SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
210EBGP0001	West of NB I-5 on-ramp	NB I-5 on-ramp	3680	20.5	69.4	C	2680	14.6	70.0	B
210EBGP0002	NB I-5 on-ramp	Yarnell off-ramp	4270	21.0	58.8	C	3070	14.5	60.4	B
210EBGP0003	Yarnell off-ramp	Yarnell on-ramp	3960	22.2	68.7	C	2750	15.0	70.0	B
210EBGP0004	Yarnell on-ramp	Roxford off-ramp	4360	30.4	49.0	D	2930	22.7	49.0	C
210EBGP0005	Roxford off-ramp	Roxford on-ramp	4010	22.6	68.6	C	2570	14.0	70.0	B
210EBGP0006	Roxford on-ramp	Polk off-ramp	4440	30.8	49.1	D	2900	22.4	49.1	C
210EBGP0007	Polk off-ramp	Polk on-ramp	4140	23.5	68.1	C	2670	14.6	70.0	B
210EBGP0008	Polk on-ramp	Hubbard off-ramp	5460	35.7	49.0	E	3300	24.9	49.0	C
210EBGP0009	Hubbard off-ramp	Hubbard on-ramp	5130	31.6	62.9	D	2990	16.3	70.0	B
210EBGP0010	Hubbard on-ramp	Maclay off-ramp	6610	*	*	F	3940	28.1	49.1	D
210EBGP0011	Maclay off-ramp	Maclay on-ramp	6240	*	*	F	3650	20.0	69.6	C
210EBGP0012	Maclay on-ramp	WB SR118 off-ramp	7270	*	*	F	4360	*	*	F
210EBGP0013	WB SR118 off-ramp	Paxton off-ramp	3910	28.1	48.9	D	2740	21.5	49.0	C
210EBGP0014	Paxton off-ramp	Paxton on-ramp	3530	19.6	69.7	C	2370	12.9	70.0	B
210EBGP0015	Paxton on-ramp	EB SR118 on-ramp	3720	22.6	50.6	C	2570	16.2	51.0	B
210EBGP0016	EB SR118 on-ramp	Osborne off-ramp	5880	30.9	48.7	D	4860	26.1	48.8	C
210EBGP0017	Osborne off-ramp	Osborne on-ramp	5350	22.6	68.6	C	4380	17.9	70.0	B
210EBGP0018	Osborne on-ramp	Wheatland off-ramp	5830	28.8	49.3	D	4710	23.9	49.3	C
210EBGP0019	Wheatland off-ramp	Wheatland on-ramp	6070	26.5	66.4	D	4580	18.8	69.9	C
210EBGP0020	Wheatland on-ramp	Sunland off-ramp	6210	31.5	48.7	D	4670	26.0	48.4	C
210EBGP0021	Sunland off-ramp	WB Sunland on-ramp	5660	24.2	67.7	C	3900	15.9	70.0	B
210EBGP0022	WB Sunland on-ramp	EB Sunland on-ramp	6230	27.5	65.7	D	4130	17.6	51.0	B
210EBGP0023	EB Sunland on-ramp	La Tuna Canyon off-ramp	6430	30.8	49.4	D	4230	21.5	49.3	C
210EBGP0024	La Tuna Canyon off-ramp	La Tuna Canyon on-ramp	6380	28.4	65.1	D	4130	16.9	70.0	B
210EBGP0025	La Tuna Canyon on-ramp	Lowell off-ramp	6790	32.9	49.3	D	4690	24.2	49.2	C
210EBGP0026	Lowell off-ramp	Lowell/Honolulu on-ramp	6650	30.2	63.9	D	4480	18.3	69.9	C
210EBGP0027	Lowell/Honolulu on-ramp	Pennsylvania off-ramp	8650	34.7	49.0	D	5630	26.2	48.8	C
210EBGP0028	Pennsylvania off-ramp	Pennsylvania on-ramp	8320	*	*	F	5170	21.4	69.1	C
210EBGP0029	Pennsylvania on-ramp	La Crescenta on-ramp	9430	*	*	F	5710	25.2	50.0	C
210EBGP0030	La Crescenta on-ramp	Ocean View off-ramp	10,490	*	*	F	6220	26.0	48.7	C
210EBGP0031	Ocean View off-ramp	East Ocean View off-ramp	10,000	30.3	63.8	D	5650	15.4	70.0	B

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-16

Existing Conditions Freeway Operations Analysis Summary – Westbound I-210 (I-5 to SR 2)
SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
210WBG0056	East of Ocean View on-ramp	Ocean View on-ramp	4760	13.2	70.0	B	8330	23.3	68.3	C
210WBG0057	Ocean View on-ramp	La Crescenta off-ramp	5200	18.1	51.0	B	8850	27.6	49.9	C
210WBG0058	La Crescenta off-ramp	Pennsylvania off-ramp	4700	23.3	48.8	C	7920	34.4	48.4	D
210WBG0059	Pennsylvania off-ramp	Pennsylvania on-ramp	4240	14.0	70.0	B	7100	23.9	67.9	C
210WBG0060	Pennsylvania on-ramp	Lowell off-ramp	4710	17.3	51.0	B	7490	25.6	66.9	C
210WBG0061	Lowell off-ramp	Honolulu on-ramp	3450	14.3	70.0	B	6200	26.8	66.2	D
210WBG0062	Honolulu on-ramp	La Tuna Canyon off-ramp	3660	20.1	48.9	C	6360	31.3	49.0	D
210WBG0063	La Tuna Canyon off-ramp	EB La Tuna Canyon on-ramp	3230	13.4	70.0	B	6040	25.9	66.8	C
210WBG0064	EB La Tuna Canyon on-ramp	WB La Tuna Canyon on-ramp	3240	14.4	51.0	B	6050	25.9	66.7	C
210WBG0065	WB La Tuna Canyon on-ramp	Sunland off-ramp	3310	18.5	49.1	B	6100	32.2	48.7	D
210WBG0066	Sunland off-ramp	EB Sunland on-ramp	3070	12.7	70.0	B	5570	23.3	68.2	C
210WBG0067	EB Sunland on-ramp	WB Sunland on-ramp	3170	15.0	50.9	B	5850	25.3	50.3	C
210WBG0068	WB Sunland on-ramp	Wheatland off-ramp	3270	17.1	49.3	B	6050	29.7	49.2	D
210WBG0069	Wheatland off-ramp	Wheatland on-ramp	3200	13.3	70.0	B	5900	25.1	67.2	C
210WBG0070	Wheatland on-ramp	Osborne off-ramp	3300	18.0	49.1	B	6020	30.4	49.0	D
210WBG0071	Osborne off-ramp	Osborne on-ramp	3070	12.7	70.0	B	5680	23.9	67.9	C
210WBG0072	Osborne on-ramp	WB SR118 off-ramp	3700	17.8	51.0	B	6160	26.5	66.3	D
210WBG0073	WB SR118 off-ramp	Paxton off-ramp	1940	12.4	49.2	B	3310	18.7	49.1	B
210WBG0074	Paxton off-ramp	Paxton on-ramp	1760	9.7	70.0	A	3070	16.7	70.0	B
210WBG0075	Paxton on-ramp	EB SR118 on-ramp	2260	15.0	51.1	B	3620	22.1	50.7	C
210WBG0076	EB SR118 on-ramp	Maclay off-ramp	3710	21.8	48.5	C	6650	*	*	F
210WBG0077	Maclay off-ramp	Maclay on-ramp	3000	16.6	70.0	B	5550	35.1	60.3	E
210WBG0078	Maclay on-ramp	Hubbard off-ramp	3180	25.3	48.4	C	5840	*	*	F
210WBG0079	Hubbard off-ramp	Hubbard on-ramp	2360	13.0	70.0	B	4630	26.6	66.3	D
210WBG0080	Hubbard on-ramp	Polk off-ramp	2670	21.8	48.7	C	4850	33.8	48.4	D
210WBG0081	Polk off-ramp	Polk on-ramp	2140	11.8	70.0	B	4080	22.7	68.5	C
210WBG0082	Polk on-ramp	Roxford off-ramp	2550	20.9	48.9	C	4320	30.4	49.0	D
210WBG0083	Roxford off-ramp	Roxford on-ramp	2120	11.7	70.0	B	4000	22.2	68.8	C
210WBG0084	Roxford on-ramp	Yarnell off-ramp	2550	26.2	50.0	C	4330	30.2	49.1	D
210WBG0085	Yarnell off-ramp	Yarnell on-ramp	2270	12.5	70.0	B	4050	22.5	68.6	C
210WBG0086	Yarnell on-ramp	I-5 SB off-ramp	2570	12.2	60.8	B	4280	20.8	58.9	C
210WBG0087	I-5 SB off-ramp	West of I-5 SB off-ramp	2130	11.8	70.0	B	3700	20.3	69.5	C

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-17

Existing Conditions Freeway Operations Analysis Summary – Eastbound I-210 (SR 2 to SR 134)
SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
210EBGP0031	West of SR 2 off-ramp	SR 2 off-ramp	10,000	30.3	63.8	D	5650	15.4	70.0	B
210EBGP0032	SR 2 off-ramp	Ocean View on-ramp	4480	18.6	69.9	C	3430	14.0	70.0	B
210EBGP0033	Ocean View on-ramp	SR 2 on-ramp	5190	23.5	50.5	C	3830	17.0	51.0	B
210EBGP0034	SR 2 on-ramp	Angeles Crest Hwy off-ramp	5860	21.2	58.7	D	4330	16.6	59.8	B
210EBGP0035	Angeles Crest Hwy off-ramp	SB Angeles Crest Hwy on-ramp	5370	22.7	68.5	C	3650	14.9	70.0	B
210EBGP0036	SB Angeles Crest Hwy on-ramp	NB Angeles Crest Hwy on-ramp	5830	24.8	50.4	C	3810	15.9	51.1	B
210EBGP0037	NB Angeles Crest Hwy on-ramp	Gould off-ramp	6040	22.0	58.4	C	4090	15.6	60.1	B
210EBGP0038	Gould off-ramp	Foothill on-ramp	5280	22.3	68.7	C	3720	15.2	70.0	B
210EBGP0039	Foothill on-ramp	Berkshire off-ramp	5780	20.9	58.6	C	4320	16.6	59.8	B
210EBGP0040	Berkshire off-ramp	Berkshire on-ramp	5240	22.1	68.8	C	4120	16.8	70.0	B
210EBGP0041	Berkshire on-ramp	Arroyo/Windsor off-ramp	5450	29.0	48.8	D	4520	26.3	48.5	C
210EBGP0042	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	4960	20.7	69.3	C	3770	15.4	70.0	B
210EBGP0043	Arroyo/Windsor on-ramp	Lincoln/Washington off-ramp	5540	18.4	69.9	C	4200	16.0	60.0	B
210EBGP0044	Lincoln/Washington off-ramp	Lincoln on-ramp	5390	22.8	68.5	C	3980	16.2	70.0	B
210EBGP0045	Lincoln on-ramp	Soto/Mountain off-ramp	6300	23.0	58.3	C	4540	17.4	59.6	B
210EBGP0046	Soto/Mountain off-ramp	Soto/Mountain on-ramp	6130	26.8	66.2	D	4280	17.5	70.0	B
210EBGP0047	Soto/Mountain on-ramp	WB I-210/EB SR 134 off-ramp	6690	*	*	F	4560	*	*	F
210EBGP0048	WB I-210/EB SR 134 off-ramp	Colorado off-ramp	910	7.6	70.0	A	690	5.6	70.0	A
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp	300	2.5	70.0	A	250	2.1	70.0	A
210EBGP0050	WB SR 134/WB I-210 on-ramp	EB SR 134 on-ramp	1760	14.6	70.0	B	1500	12.3	70.0	B
210EBGP0051	EB SR 134 on-ramp	Del Mar off-ramp	2490	25.7	48.6	C	2050	22.8	48.6	C
210EBGP0052	Del Mar off-ramp	South of Del Mar off-ramp	1800	14.9	70.0	B	1430	11.7	70.0	B

TABLE 5-18

Existing Conditions Freeway Operations Analysis Summary – Westbound I-210 (SR 2 to SR 134)
SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - Peak Hour Analysis										
Segment ID	Freeway Segment		AM Peak				PM Peak			
	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
210WBG0036	South of Del Mar on-ramp	Del Mar on-ramp	540	4.5	70.0	A	550	4.5	70.0	A
210WBG0037	Del Mar on-ramp	EB I-210/EB SR 134 off-ramp	1540	8.5	70.0	A	1870	10.2	70.0	A
210WBG0038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp	910	7.5	70.0	A	900	7.3	70.0	A
210WBG0039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp	1290	7.1	70.0	A	1540	8.4	70.0	A
210WBG0040	WB I-210/EB SR 134 on-ramp	Soto/Mountain off-ramp	4630	13.5	N/A	B	6670	19.5	N/A	B
210WBG0041	Soto/Mountain off-ramp	Soto/Mountain on-ramp	4260	14.1	70.0	B	6160	20.3	69.5	C
210WBG0042	Soto/Mountain on-ramp	Lincoln off-ramp	4490	16.7	51.0	B	6420	21.8	50.7	C
210WBG0043	Lincoln off-ramp	Lincoln on-ramp	3840	15.9	70.0	B	5290	22.0	68.9	C
210WBG0044	Lincoln on-ramp	Arroyo/Windsor off-ramp	4090	14.5	60.3	B	5490	21.4	58.6	C
210WBG0045	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	3480	14.4	70.0	B	5000	20.6	69.4	C
210WBG0046	Arroyo/Windsor on-ramp	Berkshire off-ramp	4190	23.6	48.8	C	5640	29.9	48.8	D
210WBG0047	Berkshire off-ramp	Berkshire on-ramp	3820	15.8	70.0	B	5470	22.9	68.5	C
210WBG0048	Berkshire on-ramp	Foothill off-ramp	4290	15.1	60.3	B	5950	23.4	58.0	C
210WBG0049	Foothill off-ramp	Gould on-ramp	3190	13.2	70.0	B	5450	22.8	68.5	C
210WBG0050	Gould on-ramp	Angeles Crest Hwy off-ramp	3660	12.8	60.8	B	6000	23.7	57.9	C
210WBG0051	Angeles Crest Hwy off-ramp	NB Angeles Crest Hwy on-ramp	3240	13.4	70.0	B	5450	22.8	68.5	C
210WBG0052	NB Angeles Crest Hwy on-ramp	SB Angeles Crest Hwy on-ramp	3380	16.7	51.0	B	5870	25.5	50.3	C
210WBG0053	SB Angeles Crest Hwy on-ramp	SR 2 off-ramp	3780	13.2	60.8	B	6060	23.9	58.0	C
210WBG0054	SR 2 off-ramp	Ocean View off-ramp	3240	19.2	48.9	B	5230	28.6	48.7	D
210WBG0055	Ocean View off-ramp	SR 2 on-ramp	2820	11.7	70.0	B	4680	19.2	69.8	C
210WBG0056	SR 2 on-ramp	West of SR 2 on-ramp	4760	13.1	70.0	B	8330	23.3	68.3	C

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-19

Existing Conditions Freeway Operations Analysis Summary – Eastbound I-210 (SR 134 to I-605)

SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
210EBGP0053	West of EB I-210 on-ramp	EB I-210 on-ramp	5240	16.2	70.0	B	5660	17.5	70.0	B
210EBGP0054	EB I-210 on-ramp	Marengo on-ramp	8490	22.3	68.7	C	12,610	40.0	56.7	E
210EBGP0055	Marengo on-ramp	Lake off-ramp	9290	36.7	54.9	E	13,870	*	*	F
210EBGP0056	Lake off-ramp	Lake on-ramp	7780	25.1	67.2	C	11,830	*	*	F
210EBGP0057	Lake on-ramp	Hill off-ramp	8680	34.0	55.4	D	13,290	*	*	F
210EBGP0058	Hill off-ramp	Hill on-ramp	7760	25.0	67.3	C	11,890	*	*	F
210EBGP0059	Hill on-ramp	Allen on-ramp	8210	27.0	66.1	D	12,580	*	*	F
210EBGP0060	Allen on-ramp	Sierra Madre/Altadena off-ramp	8650	33.8	55.6	D	13,090	*	*	F
210EBGP0061	Sierra Madre/Altadena off-ramp	San Gabriel off-ramp	7770	30.1	48.9	D	11,880	*	*	F
210EBGP0062	San Gabriel off-ramp	San Gabriel on-ramp	7310	23.2	68.3	C	11,260	*	*	F
210EBGP0063	San Gabriel on-ramp	Madre off-ramp	7900	30.2	56.5	D	12,000	*	*	F
210EBGP0064	Madre off-ramp	SB Rosemead off-ramp	7220	27.4	48.9	C	11,070	*	*	F
210EBGP0065	SB Rosemead off-ramp	Madre on-ramp	6820	21.4	69.1	C	10,520	40.1	56.7	E
210EBGP0066	Madre on-ramp	NB Rosemead/Michillinda off-ramp	7130	22.5	68.6	C	11,030	*	*	F
210EBGP0067	NB Rosemead/Michillinda off-ramp	Rosemead on-ramp	6760	28.1	65.3	D	10,210	*	*	F
210EBGP0068	Rosemead on-ramp	Michillinda on-ramp	6960	29.3	64.5	D	10,510	*	*	F
210EBGP0069	Michillinda on-ramp	Baldwin off-ramp	7210	27.3	57.4	C	10,920	*	*	F
210EBGP0070	Baldwin off-ramp	Baldwin on-ramp	6630	27.3	65.9	D	9660	*	*	F
210EBGP0071	Baldwin on-ramp	Santa Anita off-ramp	7000	33.8	48.9	D	10,320	*	*	F
210EBGP0072	Santa Anita off-ramp	Santa Anita on-ramp	6550	26.8	66.2	D	9330	*	*	F
210EBGP0073	Santa Anita on-ramp	Huntington off-ramp	6940	33.4	48.8	D	9990	*	*	F
210EBGP0074	Huntington off-ramp	WB Huntington on-ramp	6420	26.2	66.6	D	9190	*	*	F
210EBGP0075	WB Huntington on-ramp	EB Huntington on-ramp	6510	26.6	66.3	D	9340	*	*	F
210EBGP0076	EB Huntington on-ramp	Myrtle off-ramp	6880	36.3	48.1	E	9980	*	*	F
210EBGP0077	Myrtle off-ramp	Myrtle on-ramp	5820	23.1	68.3	C	8340	39.4	57.2	E
210EBGP0078	Myrtle on-ramp	Mountain off-ramp	6320	23.6	58.0	C	9200	36.3	55.0	E
210EBGP0079	Mountain off-ramp	Buena Vista off-ramp	5880	27.9	49.1	C	8530	*	*	F
210EBGP0080	Buena Vista off-ramp	Mountain on-ramp	5630	22.2	68.8	C	8140	37.6	58.4	E
210EBGP0081	Mountain on-ramp	Buena Vista on-ramp	6230	19.4	69.7	C	9170	31.5	62.9	D
210EBGP0082	Buena Vista on-ramp	I-605 off-ramp	6590	*	*	F	9830	*	*	F
210EBGP0083	I-605 off-ramp	Mount Olive off-ramp	3710	18.1	49.2	B	6720	30.9	49.1	D
210EBGP0084	Mount Olive off-ramp	Mount Olive on-ramp	3520	13.6	70.0	B	6430	26.0	66.7	D
210EBGP0085	Mount Olive on-ramp	I-605 on-ramp	3650	14.5	51.1	B	6650	27.3	65.9	D
210EBGP0086	I-605 on-ramp	East of I-605 on-ramp	5480	17.0	70.0	B	9330	32.3	62.3	D

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-20

Existing Conditions Freeway Operations Analysis Summary – Westbound I-210 (SR 134 to I-605)

SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
210WBG0001	East of I-605 off-ramp	I-605 off-ramp	11,050	45.0	53.3	E	7880	27.6	N/A	C
210WBG0002	I-605 off-ramp	Mount Olive off-ramp	7380	33.6	49.2	D	5300	24.9	49.3	C
210WBG0003	Mount Olive off-ramp	Mount Olive on-ramp	7210	30.8	63.4	D	5170	20.1	69.6	C
210WBG0004	Mount Olive on-ramp	I-605 on-ramp	7540	33.1	61.7	D	5360	20.9	69.3	C
210WBG0005	I-605 on-ramp	Buena Vista off-ramp	9860	38.1	48.7	E	7580	29.8	48.9	D
210WBG0006	Buena Vista off-ramp	Mountain off-ramp	9290	32.4	62.3	D	7150	22.5	68.6	C
210WBG0007	Mountain off-ramp	Buena Vista on-ramp	8330	39.6	57.0	E	6440	26.1	66.6	D
210WBG0008	Buena Vista on-ramp	Mountain on-ramp	8830	*	*	F	6760	27.9	65.5	D
210WBG0009	Mountain on-ramp	Myrtle off-ramp	9330	36.8	55.1	E	7090	26.8	57.3	C
210WBG0010	Myrtle off-ramp	Myrtle on-ramp	8470	41.1	56.0	E	6450	26.2	66.6	D
210WBG0011	Myrtle on-ramp	Huntington off-ramp	9060	*	*	F	6960	33.2	48.8	D
210WBG0012	Huntington off-ramp	Huntington on-ramp	8350	39.9	56.8	E	6440	26.1	66.6	D
210WBG0013	Huntington on-ramp	Santa Anita off-ramp	9050	*	*	F	6960	34.4	48.7	D
210WBG0014	Santa Anita off-ramp	NB Santa Anita on-ramp	8320	39.5	57.1	E	6400	25.8	66.8	C
210WBG0015	NB Santa Anita on-ramp	SB Santa Anita on-ramp	9060	*	*	F	6790	28.0	65.4	D
210WBG0016	SB Santa Anita on-ramp	Baldwin off-ramp	9500	*	*	F	7020	34.2	48.7	D
210WBG0017	Baldwin off-ramp	NB Baldwin on-ramp	8870	*	*	F	6470	26.2	66.6	D
210WBG0018	NB Baldwin on-ramp	SB Baldwin on-ramp	9170	*	*	F	6950	29.0	64.7	D
210WBG0019	SB Baldwin on-ramp	Rosemead/Michillinda off-ramp	9500	*	*	F	7190	34.0	49.0	D
210WBG0020	Rosemead/Michillinda off-ramp	NB Michillinda on-ramp	9110	*	*	F	6850	28.4	65.1	D
210WBG0021	NB Michillinda on-ramp	NB Rosemead on-ramp	9670	*	*	F	7160	30.3	63.8	D
210WBG0022	NB Rosemead on-ramp	SB Rosemead on-ramp	10,020	36.9	59.0	E	7570	24.1	67.8	C
210WBG0023	SB Rosemead on-ramp	Sierra Madre Villa off-ramp	10,420	*	*	F	8120	31.4	56.2	D
210WBG0024	Sierra Madre Villa off-ramp	Sierra Madre Villa on-ramp	10,000	36.7	59.1	E	7740	24.8	67.4	C
210WBG0025	Sierra Madre Villa on-ramp	Sierra Madre off-ramp	10,380	*	*	F	8450	32.7	56.1	D
210WBG0026	Sierra Madre off-ramp	Sierra Madre on-ramp	9840	35.7	59.8	E	7890	25.4	67.1	C
210WBG0027	Sierra Madre on-ramp	Altadena on-ramp	10,270	38.6	57.7	E	8460	27.9	65.4	D
210WBG0028	Altadena on-ramp	Allen off-ramp	10,870	*	*	F	9090	35.7	55.2	E
210WBG0029	Allen off-ramp	Hill off-ramp	10,300	38.9	57.5	E	8550	32.3	48.8	D
210WBG0030	Hill off-ramp	Hill on-ramp	9890	36.0	59.6	E	8060	26.1	66.6	D
210WBG0031	Hill on-ramp	Lake off-ramp	10,730	*	*	F	8980	35.5	55.0	E
210WBG0032	Lake off-ramp	Lake on-ramp	9510	33.6	61.3	D	7990	25.8	66.8	C
210WBG0033	Lake on-ramp	Marengo off-ramp	10,530	*	*	F	9220	36.3	55.2	E
210WBG0034	Marengo off-ramp	WB I-210/ Fair Oaks off-ramp	9680	28.2	N/A	D	8770	25.6	N/A	C
210WBG0035	WB I-210/ Fair Oaks off-ramp	West of WB I-210/Fair Oaks off-ramp	6140	19.1	69.8	C	5890	18.2	69.9	C

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-21
Existing Conditions Freeway Operations Analysis Summary – Northbound I-605
SR 710 North Study, Los Angeles County, California

Northbound Interstate 605 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
605NBGP0001	South of SR 60 off-ramp	SR 60 off-ramp	7480	19.8	69.6	C	9820	26.8	66.2	D
605NBGP0002	SR 60 off-ramp	EB SR 60 on-ramp	4000	21.3	69.1	C	6300	40.4	56.5	E
605NBGP0003	EB SR 60 on-ramp	WB SR 60 on-ramp	5520	22.2	68.8	C	7830	35.4	60.1	E
605NBGP0004	WB SR 60 on-ramp	Valley off-ramp	6490	33.1	48.4	D	8810	*	*	F
605NBGP0005	Valley off-ramp	EB Valley on-ramp	5650	22.8	68.5	C	7710	34.4	60.8	D
605NBGP0006	EB Valley on-ramp	WB Valley on-ramp	5770	23.5	50.5	C	7820	35.3	60.2	E
605NBGP0007	WB Valley on-ramp	I-10 off-ramp	6530	*	*	F	8530	*	*	F
605NBGP0008	I-10 off-ramp	I-10 on-ramp	3000	15.8	70.0	B	4980	27.4	65.8	D
605NBGP0009	I-10 on-ramp	Ramona off-ramp	5530	20.6	59.2	C	7520	*	*	F
605NBGP0010	Ramona off-ramp	Ramona on-ramp	4820	19.1	69.8	C	6560	26.9	66.1	D
605NBGP0011	Ramona on-ramp	Lower Azusa/Los Angeles off-ramp	5360	28.0	48.4	D	7000	36.1	48.1	E
605NBGP0012	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	4560	18.0	70.0	C	5950	23.7	68.0	C
605NBGP0013	Lower Azusa/Los Angeles on-ramp	Live Oak off-ramp	4880	27.3	48.5	C	6200	33.5	48.2	D
605NBGP0014	Live Oak off-ramp	EB Arrow on-ramp	4110	16.2	70.0	B	5180	20.2	69.5	C
605NBGP0015	EB Arrow on-ramp	WB Arrow on-ramp	4290	17.0	51.0	B	5300	20.7	69.4	C
605NBGP0016	WB Arrow on-ramp	EB I-210 off-ramp	4670	20.4	N/A	C	5600	24.5	N/A	C
605NBGP0017	EB I-210 off-ramp	Huntington off-ramp	2840	15.0	70.0	B	2930	15.2	70.0	B
605NBGP0018	Huntington off-ramp	North of Huntington off-ramp	2330	18.4	69.9	C	2220	17.2	70.0	B

TABLE 5-22
Existing Conditions Freeway Operations Analysis Summary – Southbound I-605
SR 710 North Study, Los Angeles County, California

Southbound Interstate 605 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
605SBGP0001	North of Huntington on-ramp	Huntington on-ramp	3670	32.7	62.0	D	2580	20.1	69.5	C
605SBGP0002	Huntington on-ramp	EB I-210 on-ramp	3940	21.0	69.3	C	2700	14.0	70.0	B
605SBGP0003	EB I-210 on-ramp	Arrow off-ramp	6820	33.3	48.7	D	5810	30.2	48.3	D
605SBGP0004	Arrow off-ramp	Live Oak on-ramp	6230	25.8	66.8	C	4890	19.0	69.8	C
605SBGP0005	Live Oak on-ramp	Lower Azusa/Los Angeles off-ramp	7730	36.7	48.6	E	6360	31.6	48.5	D
605SBGP0006	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	7110	31.1	63.2	D	5640	22.2	68.7	C
605SBGP0007	Lower Azusa/Los Angeles on-ramp	Ramona off-ramp	8560	*	*	F	6750	32.0	48.6	D
605SBGP0008	Ramona off-ramp	Ramona on-ramp	7960	37.8	58.3	E	6060	24.3	67.7	C
605SBGP0009	Ramona on-ramp	I-10 off-ramp	9250	*	*	F	6650	24.4	58.0	C
605SBGP0010	I-10 off-ramp	I-10 on-ramp	5100	20.3	69.5	C	4040	15.7	70.0	B
605SBGP0011	I-10 on-ramp	Valley off-ramp	8410	*	*	F	7550	*	*	F
605SBGP0012	Valley off-ramp	Valley on-ramp	7560	34.4	60.8	D	6500	26.6	66.3	D
605SBGP0013	Valley on-ramp	SR 60 off-ramp	8750	*	*	F	7200	31.5	N/A	D
605SBGP0014	SR 60 off-ramp	WB SR 60 on-ramp	5800	35.8	59.8	E	4530	24.2	67.8	C
605SBGP0015	WB SR 60 on-ramp	EB SR 60 on-ramp	8640	44.7	53.5	E	7100	30.1	63.9	D
605SBGP0016	EB SR 60 on-ramp	South of EB SR 60 on-ramp	9560	26.6	66.3	D	7920	20.6	69.4	C

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-23

Existing Conditions Freeway Operations Analysis Summary – Northbound I-710/SR 710
SR 710 North Study, Los Angeles County, California

Northbound Interstate 710/State Route 710 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
710NBGP0001	South of NB I-5 off-ramp	NB I-5 off-ramp	10,150	39.6	57.0	<i>E</i>	8680	30.0	64.0	D
710NBGP0002	NB I-5 off-ramp	Olympic off-ramp	6760	*	*	<i>F</i>	6530	*	*	<i>F</i>
710NBGP0003	Olympic off-ramp	NB I-5 on-ramp	6050	39.1	57.4	<i>E</i>	5830	36.1	59.6	<i>E</i>
710NBGP0004	NB I-5 on-ramp	Olympic on-ramp	7410	32.4	62.2	D	7390	32.1	62.5	D
710NBGP0005	Olympic on-ramp	SR 60 off-ramp	7850	*	*	<i>F</i>	7800	*	*	<i>F</i>
710NBGP0006	SR 60 off-ramp	Third off-ramp	5010	24.2	49.2	C	4530	22.2	49.2	C
710NBGP0007	Third off-ramp	Third on-ramp	4830	26.4	66.4	D	4350	23.0	68.4	C
710NBGP0008	Third on-ramp	Cesar Chavez off-ramp	4930	32.2	48.6	D	4450	29.9	48.6	D
710NBGP0009	Cesar Chavez off-ramp	SR 60 on-ramp	4260	22.6	68.6	C	3780	19.6	69.7	C
710NBGP0010	SR 60 on-ramp	Cesar Chavez on-ramp	6960	29.5	64.4	D	4850	18.8	69.8	C
710NBGP0011	Cesar Chavez on-ramp	Ramona off-ramp	7540	*	*	<i>F</i>	5150	50.7	48.7	<i>E</i>
710NBGP0012	Ramona off-ramp	I-10 off-ramp	6750	*	*	<i>F</i>	4590	26.8	N/A	C
710NBGP0013	I-10 off-ramp	EB I-10 on-ramp	2170	16.9	70.0	B	1370	10.6	70.0	A
710NBGP0014	EB I-10 on-ramp	Busway on-ramp	2370	12.3	70.0	B	1600	8.3	70.0	A
710NBGP0015	Busway on-ramp	WB I-10 on-ramp	2450	16.1	50.8	B	1700	12.3	50.9	B
710NBGP0016	WB I-10 on-ramp	North of WB I-10 on-ramp	2560	15.3	51.0	B	1820	11.5	51.2	B

TABLE 5-24

Existing Conditions Freeway Operations Analysis Summary – Southbound I-710/SR 710
SR 710 North Study, Los Angeles County, California

Southbound Interstate 710/State Route 710 - Peak Hour Analysis										
Freeway Segment			AM Peak				PM Peak			
Segment ID	From	To	Volume	Density	Speed	LOS	Volume	Density	Speed	LOS
710SBGP0001	North of EB I-10 off-ramp	EB I-10 off-ramp	2610	20.1	49.2	C	3330	24.0	49.3	C
710SBGP0002	EB I-10 off-ramp	WB I-10 off-ramp	2450	13.0	70.0	B	3230	17.0	70.0	B
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp	2140	17.0	70.0	B	3020	24.7	67.5	C
710SBGP0004	WB I-10 on-ramp	EB I-10/Ramona on-ramp	3860	20.6	69.4	C	5110	29.2	64.6	D
710SBGP0005	EB I-10/Ramona on-ramp	Cesar Chavez off-ramp	5620	37.6	49.0	<i>E</i>	7250	*	*	<i>F</i>
710SBGP0006	Cesar Chavez off-ramp	SR 60 off-ramp	5270	30.7	63.5	D	6790	*	*	<i>F</i>
710SBGP0007	SR 60 off-ramp	Cesar Chavez on-ramp	4060	21.8	68.9	C	5210	30.0	64.0	D
710SBGP0008	Cesar Chavez on-ramp	Third on-ramp	4580	27.2	50.0	C	5930	37.2	58.7	<i>E</i>
710SBGP0009	Third on-ramp	Third off-ramp	4700	29.3	56.9	D	6080	39.5	54.5	<i>E</i>
710SBGP0010	Third off-ramp	SR 60 on-ramp	4570	25.2	67.2	C	5900	36.9	58.9	<i>E</i>
710SBGP0011	SR 60 on-ramp	Whittier/Olympic off-ramp	7560	*	*	<i>F</i>	9820	*	*	<i>F</i>
710SBGP0012	Whittier/Olympic off-ramp	SB I-5 off-ramp	7040	30.8	63.4	D	9130	*	*	<i>F</i>
710SBGP0013	SB I-5 off-ramp	Whittier/Olympic on-ramp	5330	31.3	63.1	D	6890	*	*	<i>F</i>
710SBGP0014	Whittier/Olympic on-ramp	SB I-5 on-ramp	5830	36.4	59.3	<i>E</i>	7670	*	*	<i>F</i>
710SBGP0015	SB I-5 on-ramp	South of SB I-5 on-ramp	7560	25.0	67.3	C	9940	37.6	58.4	<i>E</i>

NOTES:

Volume is reported in mean vehicles per hour (vph) for traffic demand

Density is reported in passenger cars per mile per lane (pc/mi/ln)

Speed is reported in miles per hour (mph)

Level of Service (LOS) calculations per the 2010 Highway Capacity Manual

* Density and speed are not reported on a LOS F segment for controlling and weave results. When demand exceeds capacity, operations are controlled by bottlenecks and queues, so density and speed estimates on individual segments are not used directly.

N/A = speed is not available for major diverge analysis results

TABLE 5-25

Existing Conditions Intersection Operations Summary
SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	Existing (2013)			
			AM		PM	
			Delay	LOS	Delay	LOS
1	Atlantic Boulevard / Glendon Way	Signal	49.4	D	18.3	B
2	Atlantic Boulevard / Main Street	Signal	39.4	D	44.1	D
3	Atlantic Boulevard / Mission Road	Signal	32.9	C	54.2	D
4	Atlantic Boulevard / Valley Boulevard	Signal	42.8	D	51.0	D
5	Fremont Avenue / Commonwealth Avenue	Signal	19.7	B	29.9	C
6	Fremont Avenue / Concord Avenue	Signal	11.2	B	14.9	B
7	Fremont Avenue / Hellman Avenue	Signal	33.7	C	40.5	D
8	Fremont Avenue / Main Street	Signal	25.3	C	32.5	C
9	Fremont Avenue / Mission Road	Signal	45.9	D	59.6	E
10	Fremont Avenue / Norwood Avenue	TWSC	44.3	E	773.1	F
11	Fremont Avenue / Poplar Boulevard	Signal	9.9	A	8.8	A
12	Fremont Avenue / Valley Boulevard	Signal	43.8	D	46.4	D
13	Garfield Avenue / Glendon Way	Signal	16.5	B	15.4	B
14	Garfield Avenue / Main Street	Signal	30.9	C	45.0	D
15	Garfield Avenue / Mission Road	Signal	40.4	D	60.5	E
16	Garfield Avenue / Norwood Place	TWSC	10.2	B	9.1	A
17	Garfield Avenue / Valley Boulevard	Signal	38.8	D	44.7	D
18	Huntington Drive / Main Street	Signal	0.9	A	0.6	A
19	SR 710 NB Off-Ramp / Valley Boulevard	Signal	28.5	C	12.8	B
20	SR 710 SB On-Ramp / Valley Boulevard	Signal	48.4	D	75.5	E
21	Baldwin Avenue / Foothill Boulevard	Signal	20.0	C	28.7	C
22	Baldwin Avenue / Huntington Drive	Signal	38.4	D	47.7	D
23	Santa Anita Avenue / Duarte Road	Signal	22.0	C	23.2	C
24	Santa Anita Avenue / Live Oak Avenue	Signal	30.5	C	33.2	C
25	Sunset Boulevard / Huntington Drive	Signal	53.1	D	53.0	D
26	I-605 NB Ramps / Ramona Boulevard	Signal	25.8	C	53.3	D
27	Atlantic Boulevard / Beverly Boulevard	Signal	28.8	C	45.3	D
28	Atlantic Boulevard / Pomona Boulevard	Signal	35.4	D	65.0	E
29	Atlantic Boulevard / Whittier Boulevard	Signal	24.2	C	30.4	C
30	Campus Road / Ramona Boulevard	Signal	27.3	C	20.1	C
31	Rosemead Boulevard / California Boulevard	Signal	25.7	C	30.6	C
32	Rosemead Boulevard / Colorado Boulevard	Signal	27.8	C	70.0	E
33	Baldwin Avenue / Valley Boulevard	Signal	32.6	C	38.5	D
34	Durfee Avenue / Valley Boulevard	Signal	50.9	D	70.5	E
35	Peck Road / Garvey Avenue	Signal	16.1	B	17.0	B
36	Peck Road / I-10 EB Ramps	N/A		Free		
37	Peck Road / Lower Azusa Road	Signal	49.8	D	69.9	E
38	Peck Road / Valley Boulevard	Signal	34.7	C	42.8	D
39	Santa Anita Avenue / I-10 EB Ramps	Signal	16.2	B	26.0	C
40	Santa Anita Avenue / Lower Azusa Road	Signal	55.7	E	66.1	E
41	Santa Anita Avenue / Valley Boulevard	Signal	37.4	D	36.6	D
42	Tyler Avenue / Valley Boulevard	Signal	13.2	B	14.5	B
43	Valley Boulevard / Garvey Avenue	Signal	22.5	C	32.7	C
44	Harvey Drive / Wilson Avenue	Signal	25.1	C	30.1	C
45	Myrtle Avenue / Longden Avenue	Signal	16.4	B	33.1	C
46	Peck Road/Myrtle Avenue / Live Oak Avenue	Signal	27.3	C	40.3	D
47	Angeles Crest Highway / Foothill Boulevard	Signal	14.0	B	12.4	B
48	Gould Avenue / Foothill Boulevard	Signal	20.4	C	25.3	C
49	I-210 EB Ramps / Berkshire Place	AWSC	25.7	D	14.2	B
50	I-210 EB Ramps / Foothill Boulevard	N/A		Free		
51	I-210 WB Ramps / Berkshire Place	TWSC	22.3	C	12.1	B
52	I-210 WB Ramps / Foothill Boulevard	Signal	12.5	B	11.3	B
53	Ocean View Boulevard / Foothill Boulevard	Signal	23.1	C	24.2	C

NOTES:

Delay is reported in seconds per vehicle

Level of service calculations per the 2010 Highway Capacity Manual (or 2000 Highway Capacity Manual where geometry does not allow 2010 analysis)

AWSC = All-way stop control

TWSC = Two-way stop control, the highest delay at any approach reported

N/A = unsignalized intersection

Free = unsignalized intersection with free movements. Delay and LOS is not reported

OVF = overflow delay

TABLE 5-25

Existing Conditions Intersection Operations Summary
SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	Existing (2013)			
			AM		PM	
			Delay	LOS	Delay	LOS
54	SR 2 Ramps / Foothill Boulevard	Signal	9.2	A	9.5	A
55	Verdugo Boulevard / Foothill Boulevard	Signal	20.7	C	21.4	C
56	Avenue 20 / Broadway	Signal	20.3	C	15.9	B
57	Avenue 64 / York Boulevard	Signal	23.6	C	24.4	C
58	Broadway / Colorado Boulevard	Signal	12.8	B	106.2	F
59	Collis Avenue / Huntington Drive	Signal	30.9	C	21.5	C
60	Concord Avenue / Alhambra Avenue	TWSC	26.5	D	57.9	F
61	Daly Street / Broadway	Signal	52.2	D	29.6	C
62	Eagle Rock Boulevard / SR 2 Ramps	Signal	41.5	D	40.0	D
63	Eagle Rock Boulevard / Verdugo Road/Avenue 40	Signal	29.6	C	43.6	D
64	Eagle Rock Boulevard / York Boulevard	Signal	15.3	B	20.2	C
65	Eastern Avenue / Huntington Drive	Signal	26.0	C	118.2	F
66	Figueroa Street / Avenue 26	Signal	46.8	D	33.6	C
67	Figueroa Street / Colorado Boulevard	Signal	29.6	C	15.9	B
68	Figueroa Street / SR 134 EB Ramps	Signal	1.0	A	1.0	A
69	Figueroa Street / SR 134 WB Ramps	AWSC	44.9	E	38.8	E
70	Figueroa Street / York Boulevard	Signal	24.0	C	22.4	C
71	Griffin Avenue / Broadway	Signal	18.3	B	18.6	B
72	Huntington Drive / Monterey Road	Signal	45.1	D	33.6	C
73	Marengo Street / Mission Road	Signal	40.3	D	44.1	D
74	Pasadena Avenue / Broadway	Signal	68.0	E	22.9	C
75	San Pasqual Avenue / York Boulevard	Signal	13.2	B	13.0	B
76	Soto Street / Marengo Street	Signal	15.6	B	12.2	B
77	Myrtle Avenue / Duarte Road	Signal	49.6	D	48.1	D
78	Myrtle Avenue / I-210 EB Ramps	Signal	23.9	C	29.3	C
79	Atlantic Boulevard / Cesar Chavez Avenue	Signal	31.8	C	50.0	D
80	Atlantic Boulevard / Garvey Avenue	Signal	34.0	C	50.6	D
81	Atlantic Boulevard / SR 60 EB Ramps	Signal	10.1	B	11.7	B
82	Atlantic Boulevard / SR 60 WB Ramps	Signal	13.2	B	11.8	B
83	McDonnell Avenue/Corporate Center Drive / Floral Drive	Signal	21.0	C	21.1	C
84	Arroyo Seco Parkway / California Boulevard	Signal	24.8	C	28.0	C
85	Arroyo Seco Parkway / Colorado Boulevard	Signal	15.8	B	18.0	B
86	Arroyo Seco Parkway / Del Mar Boulevard	Signal	23.9	C	26.9	C
87	Fair Oaks Avenue / California Boulevard	Signal	28.6	C	29.8	C
88	Fair Oaks Avenue / Corson Street (I-210 EB Off-Ramp)	Signal	21.8	C	18.7	B
89	Fair Oaks Avenue / Del Mar Boulevard	Signal	26.5	C	29.0	C
90	Fair Oaks Avenue / Maple Street (I-210 WB On-Ramp)	Signal	22.1	C	23.6	C
91	Fair Oaks Avenue / Mountain Street	Signal	12.9	B	12.2	B
92	Fair Oaks Avenue / Orange Grove Boulevard	Signal	30.9	C	26.1	C
93	Fair Oaks Avenue / Raymond Hill Road	Signal	9.3	A	8.7	A
94	Fair Oaks Avenue / Walnut Street	Signal	23.5	C	26.1	C
95	Hill Avenue / Corson Street (I-210 EB Off-Ramp)	Signal	30.6	C	33.5	C
96	Hill Avenue / Maple Street (I-210 WB On-Ramp)	Signal	38.6	D	19.1	B
97	I-210 EB Ramps / Mountain Street	TWSC	36.0	E	22.1	C
98	I-210 WB Ramps / Mountain Street	TWSC	15.7	C	21.4	C
99	Lake Avenue / Corson Street (I-210 EB Off-Ramp)	Signal	17.2	B	19.9	B
100	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Signal	40.0	D	23.0	C
101	Lincoln Avenue / Orange Grove Boulevard	Signal	12.2	B	12.4	B
102	Los Robles Avenue / Colorado Boulevard	Signal	13.4	B	14.6	B
103	Los Robles Avenue / Walnut Street	Signal	13.9	B	15.0	B
104	Marengo Avenue / Colorado Boulevard	Signal	17.4	B	20.1	C
105	Marengo Street / Corson Street (I-210 EB Ramps)	Signal	16.0	B	16.5	B
106	Marengo Street / Maple Street (I-210 WB Ramps)	Signal	23.7	C	25.6	C

NOTES:

Delay is reported in seconds per vehicle

Level of service calculations per the 2010 Highway Capacity Manual (or 2000 Highway Capacity Manual where geometry does not allow 2010 analysis)

AWSC = All-way stop control**TWSC** = Two-way stop control, the highest delay at any approach reported**N/A** = unsignalized intersection**Free** = unsignalized intersection with free movements. Delay and LOS is not reported**OVF** = overflow delay

TABLE 5-25

Existing Conditions Intersection Operations Summary
SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	Existing (2013)			
			AM		PM	
			Delay	LOS	Delay	LOS
107	Orange Grove Boulevard / Colorado Boulevard	Signal	19.1	B	17.3	B
108	Orange Grove Boulevard / Walnut Street	Signal	6.2	A	7.6	A
109	Saint John Avenue / California Boulevard	Signal	27.2	C	21.1	C
110	Saint John Avenue / Colorado Boulevard	Signal	12.2	B	13.0	B
111	Saint John Avenue / Del Mar Boulevard	Signal	8.6	A	9.0	A
112	San Rafael Avenue / SR 134 EB Ramps	Signal	2.9	A	3.4	A
113	San Rafael Avenue / SR 134 WB Ramps	Signal	13.7	B	13.2	B
114	Sierra Madre Boulevard / Del Mar Boulevard	Signal	28.5	C	34.9	C
115	Rosemead Boulevard / Lower Azusa Road	Signal	27.9	C	24.1	C
116	Rosemead Boulevard / Marshall Street	Signal	30.6	C	43.4	D
117	Rosemead Boulevard / Mission Drive	Signal	47.7	D	50.3	D
118	Rosemead Boulevard / Valley Boulevard	Signal	50.3	D	55.7	E
119	Temple City Boulevard / Valley Boulevard	Signal	57.0	E	56.5	E
120	Walnut Grove Avenue / Mission Drive	Signal	13.9	B	14.4	B
121	Walnut Grove Avenue / Valley Boulevard	Signal	16.6	B	19.6	B
122	Del Mar Avenue / Mission Road	Signal	53.7	D	49.2	D
123	Del Mar Avenue / Valley Boulevard	Signal	33.5	C	46.8	D
124	Rosemead Boulevard / Huntington Drive	Signal	31.7	C	48.6	D
125	San Gabriel Boulevard / Las Tunas Drive	Signal	45.4	D	98.5	F
126	San Gabriel Boulevard / Marshall Street	Signal	41.9	D	33.1	C
127	San Gabriel Boulevard / Mission Road	Signal	25.6	C	26.3	C
128	San Gabriel Boulevard / Valley Boulevard	Signal	37.2	D	51.9	D
129	Walnut Grove Avenue / Broadway	Signal	15.6	B	25.2	C
130	Atlantic Boulevard / Garfield Avenue	Signal	26.6	C	26.2	C
131	Atlantic Boulevard / Huntington Drive	Signal	33.9	C	36.2	D
132	Del Mar Avenue / Huntington Drive	Signal	25.9	C	26.6	C
133	El Molino Avenue / Huntington Drive	TWSC	32.0	D	17.4	C
134	Garfield Avenue / Huntington Drive	Signal	15.7	B	14.9	B
135	Oak Knoll Avenue / Huntington Drive	Signal	17.1	B	11.8	B
136	San Gabriel Boulevard / Huntington Drive	Signal	50.9	D	47.3	D
137	San Marino Avenue / Huntington Drive	Signal	41.4	D	36.5	D
138	Virginia Road / Huntington Drive	Signal	30.7	C	30.6	C
139	Fair Oaks Avenue / Huntington Drive	Signal	18.3	B	21.2	C
140	Fair Oaks Avenue / Mission Street	Signal	39.7	D	43.9	D
141	Fair Oaks Avenue / Monterey Road	Signal	17.7	B	21.5	C
142	Fair Oaks Avenue / SR 110 NB Off-Ramp	Signal	9.6	A	18.0	B
143	Fair Oaks Avenue / SR 110 SB On-Ramps	Signal	15.0	B	14.5	B
144	Fremont Avenue / Alhambra Road	Signal	34.4	C	37.9	D
145	Fremont Avenue / Huntington Drive	Signal	44.1	D	68.5	E
146	Fremont Avenue / Monterey Road	Signal	15.3	B	17.5	B
147	Pasadena Avenue / Monterey Road	Signal	17.6	B	18.6	B
148	Rosemead Boulevard / Las Tunas Drive	Signal	33.3	C	38.7	D
149	Fremont Avenue / Montezuma Avenue	Signal	52.8	D	21.8	C
150	Marengo Avenue / Main Street	Signal	15.1	B	16.5	B
151	Marengo Avenue / Mission Road	Signal	19.0	B	22.4	C
152	Marengo Avenue / Valley Boulevard	Signal	38.2	D	34.9	C
153	Mednik Avenue / Cesar Chavez Avenue	Signal	11.9	B	16.2	B
154	Mednik Avenue / First Street	Signal	14.1	B	13.8	B
155	Mednik Avenue / Floral Drive	Signal	11.4	B	13.9	B
200	Eagle Rock Boulevard / Colorado Boulevard	Signal	14.9	B	15.3	B

NOTES:

Delay is reported in seconds per vehicle

Level of service calculations per the 2010 Highway Capacity Manual (or 2000 Highway Capacity Manual where geometry does not allow 2010 analysis)

AWSC = All-way stop control**TWSC** = Two-way stop control, the highest delay at any approach reported**N/A** = unsignalized intersection**Free** = unsignalized intersection with free movements. Delay and LOS is not reported**OVF** = overflow delay

TABLE 5-26

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound SR 2
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 2 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2EBGP0001	South of I-5 off-ramp	I-5 off-ramp	1410	A	1410	A	1390	A	1420	A	1430	A	1420	A	1400	A	1410	A	1410	A	1390	A	1430	A	1430	A
2EBGP0002	I-5 off-ramp	SB I-5 on-ramp	1040	A	1040	A	1020	A	1030	A	1020	A	1020	A	1010	A	1010	A	990	A	980	A	1010	A	1010	A
2EBGP0003	SB I-5 on-ramp	NB I-5 on-ramp	1290	B	1290	B	1270	B	1310	B	1300	B	1280	B	1270	B	1230	B	1230	B	1200	B	1250	B	1250	B
2EBGP0004	NB I-5 on-ramp	Fletcher on-ramp	3200	B	3200	B	3150	B	3170	B	3230	B	2950	B	2960	B	2920	B	2750	A	2670	A	2770	A	2770	A
2EBGP0005	Fletcher on-ramp	San Fernando off-ramp	4000	B	4000	B	3970	B	3990	B	4030	B	3750	B	3750	B	3720	B	3530	B	3460	B	3580	B	3580	B
2EBGP0006	San Fernando off-ramp	San Fernando on-ramp	3190	B	3190	B	3180	B	3190	B	3200	B	2870	B	2880	B	2830	B	2600	A	2540	A	2670	A	2670	A
2EBGP0007	San Fernando on-ramp	Verdugo off-ramp	3690	B	3690	B	3670	B	3700	B	3710	B	3370	B	3380	B	3340	B	3100	B	3050	B	3170	B	3170	B
2EBGP0008	Verdugo off-ramp	Verdugo on-ramp	3160	B	3160	B	3140	B	3160	B	3180	B	2830	B	2830	B	2810	B	2530	A	2500	A	2600	A	2600	A
2EBGP0009	Verdugo on-ramp	York on-ramp	3540	B	3540	B	3520	B	3530	B	3550	B	3190	A	3190	A	3170	A	2880	A	2840	A	2950	A	2950	A
2EBGP0010	York on-ramp	Colorado off-ramp	4440	C	4440	C	4370	C	4380	C	4410	C	4040	C	4040	C	4010	C	3730	C	3690	C	3790	C	3790	C
2EBGP0011	Colorado off-ramp	SR 134 EB off-ramp	3490	B	3490	B	3420	B	3430	B	3450	B	2970	B	2970	B	2940	B	2630	A	2620	A	2700	A	2700	A
2EBGP0012	SR 134 EB off-ramp	SR 134 WB off-ramp	2610	B	2610	B	2530	B	2540	B	2570	B	2110	B	2100	B	2080	B	1810	B	1780	B	1870	B	1870	B
2EBGP0013	SR 134 WB off-ramp	Holly off-ramp	2050	B	2050	B	2000	B	1990	B	2020	B	1460	A	1480	A	1450	A	1280	A	1310	A	1340	A	1340	A
2EBGP0014	Holly off-ramp	Holly on-ramp	1820	A	1820	A	1770	A	1760	A	1790	A	1240	A	1270	A	1230	A	1080	A	1120	A	1150	A	1150	A
2EBGP0015	Holly on-ramp	SR 134 on-ramp	2350	B	2350	B	2290	B	2280	B	2310	B	1760	A	1790	A	1750	A	1610	A	1640	A	1670	A	1670	A
2EBGP0016	SR 134 on-ramp	Mountain off-ramp	3590	B	3590	B	3530	B	3520	B	3550	B	3010	B	3040	B	3000	B	2880	B	2900	B	2930	B	2930	B
2EBGP0017	Mountain off-ramp	Mountain on-ramp	2970	A	2970	A	2910	A	2900	A	2930	A	2400	A	2430	A	2400	A	2270	A	2300	A	2320	A	2320	A
2EBGP0018	Mountain on-ramp	Fern Lane Underpass	3260	A	3260	A	3210	B	3200	B	3230	B	2700	A	2730	A	2700	A	2550	A	2600	A	2620	A	2620	A
2EBGP0019	Fern Lane Underpass	EB I-210/Verdugo off-ramp	3260	A	3260	A	3210	A	3200	A	3230	A	2700	A	2730	A	2700	A	2550	A	2600	A	2620	A	2620	A
2EBGP0020	EB I-210/Verdugo off-ramp	Foothill off-ramp	2400	A	2400	A	2390	A	2380	A	2390	A	2070	A	2080	A	2060	A	1970	A	2000	A	2020	A	2020	A
2EBGP0021	Foothill off-ramp	North of Foothill off-ramp	2090	A	2090	A	2080	A	2070	A	2070	A	1790	A	1810	A	1790	A	1700	A	1730	A	1750	A	1750	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-27

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound SR 2
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 2 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2EBGP0001	South of I-5 off-ramp	I-5 off-ramp	3130	B	3130	B	3130	B	3120	B	3160	B	3120	B	3090	B	3080	B	3040	B	3050	B	3060	B	3060	B
2EBGP0002	I-5 off-ramp	SB I-5 on-ramp	2320	B	2320	B	2320	B	2310	B	2320	B	2300	B	2290	B	2290	B	2260	B	2260	B	2270	B	2270	B
2EBGP0003	SB I-5 on-ramp	NB I-5 on-ramp	2860	C	2860	C	2850	C	2850	C	2850	C	2830	C	2810	C	2820	C	2780	C	2790	C	2800	C	2800	C
2EBGP0004	NB I-5 on-ramp	Fletcher on-ramp	7300	D	7300	D	7290	D	7300	D	7310	D	7110	D	7040	D	7080	D	6860	D	6800	D	6890	D	6890	D
2EBGP0005	Fletcher on-ramp	San Fernando off-ramp	8430	D	8430	D	8400	D	8410	D	8440	D	8220	D	8160	D	8190	D	8000	D	7920	D	8000	D	8000	D
2EBGP0006	San Fernando off-ramp	San Fernando on-ramp	7650	D	7650	D	7730	D	7750	D	7640	D	7340	D	7280	D	7290	D	6970	D	6910	D	7000	D	7000	D
2EBGP0007	San Fernando on-ramp	Verdugo off-ramp	8610	F	8610	F	8510	F	8520	F	8620	F	8300	E	8240	E	8240	E	7920	E	7860	E	7950	E	7950	E
2EBGP0008	Verdugo off-ramp	Verdugo on-ramp	7580	D	7580	D	7510	D	7520	D	7590	D	7280	D	7210	D	7230	D	6860	D	6810	D	6910	D	6910	D
2EBGP0009	Verdugo on-ramp	York on-ramp	7990	C	7990	C	7960	C	7960	C	7990	C	7670	C	7580	C	7610	C	7200	C	7150	C	7270	C	7270	C
2EBGP0010	York on-ramp	Colorado off-ramp	8660	E	8660	E	8590	E	8600	E	8650	E	8340	E	8240	E	8270	E	7850	E	7810	D	7920	E	7920	E
2EBGP0011	Colorado off-ramp	SR 134 EB off-ramp	7390	C	7390	C	7330	C	7340	C	7380	C	7010	C	6920	C	6940	C	6400	C	6400	C	6500	C	6500	C
2EBGP0012	SR 134 EB off-ramp	SR 134 WB off-ramp	5450	D	5450	D	5390	D	5380	D	5450	D	5050	D	4970	D	5000	D	4520	D	4530	C	4620	D	4620	D
2EBGP0013	SR 134 WB off-ramp	Holly off-ramp	4180	C	4180	C	4110	C	4100	C	4180	C	3660	B	3560	B	3620	B	3100	B	3170	B	3200	B	3200	B
2EBGP0014	Holly off-ramp	Holly on-ramp	3860	B	3860	B	3790	B	3790	B	3860	B	3300	B	3190	B	3260	B	2750	A	2840	A	2850	A	2850	A
2EBGP0015	Holly on-ramp	SR 134 on-ramp	4560	B	4560	B	4490	B	4490	B	4560	B	4020	B	3910	B	3990	B	3480	B	3550	B	3570	B	3570	B
2EBGP0016	SR 134 on-ramp	Mountain off-ramp	7410	F	7410	F	7340	F	7340	F	7420	F	6950	F	6820	F	6910	F	6470	F	6510	F	6540	F	6540	F
2EBGP0017	Mountain off-ramp	Mountain on-ramp	6530	C	6530	C	6460	C	6470	C	6540	C	6050	C	5920	C	6020	C	5570	B	5630	B	5640	B	5640	B
2EBGP0018	Mountain on-ramp	Fern Lane Underpass	6890	C	6890	C	6830	C	6830	C	6910	C	6430	C	6310	C	6410	C	5960	C	6020	C	6030	C	6030	C
2EBGP0019	Fern Lane Underpass	EB I-210/Verdugo off-ramp	6890	C	6890	C	6830	B	6830	B	6910	C	6430	B	6310	B	6410	B	5960	B	6020	B	6030	B	6030	B
2EBGP0020	EB I-210/Verdugo off-ramp	Foothill off-ramp	5050	B	5050	B	5030	B	5040	B	5080	B	4680	B	4570	B	4660	B	4270	B	4330	B	4340	B	4340	B
2EBGP0021	Foothill off-ramp	North of Foothill off-ramp	3720	C	3720	C	3710	C	3710	C	3750	C	3380	B	3280	B	3370	B	2980	B	3030	B	3050	B	3050	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-28

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound SR 2
 SR 710 North Study, Los Angeles County, California

Westbound State Route 2 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2WBGPO001	North of Foothill on-ramp	Foothill on-ramp	5550	D	5550	D	5540	D	5520	D	5500	D	5250	D	5300	D	5220	D	5070	D	5110	D	5110	D	5110	D
2WBGPO002	Foothill on-ramp	EB I-210/Verdugo on-ramp	5870	E	5870	E	5870	E	5850	E	5830	E	5570	D	5610	D	5540	D	5380	D	5420	D	5430	D	5430	D
2WBGPO003	EB I-210/Verdugo on-ramp	Mountain off-ramp	6410	D	6410	D	6290	D	6310	D	6340	D	5930	D	5980	D	5890	D	5700	C	5740	C	5760	C	5760	C
2WBGPO004	Mountain off-ramp	Mountain on-ramp	6010	C	6010	C	5890	C	5910	C	5940	C	5530	C	5580	C	5490	C	5330	C	5360	C	5370	C	5370	C
2WBGPO005	Mountain on-ramp	SR 134 off-ramp	6750	C	6750	C	6630	C	6640	C	6680	C	6270	C	6310	C	6220	C	6070	C	6090	C	6110	C	6110	C
2WBGPO006	SR 134 off-ramp	Holly off-ramp	4150	C	4150	C	4020	C	4030	C	4060	C	3640	C	3690	C	3590	C	3380	B	3420	C	3430	C	3430	C
2WBGPO007	Holly off-ramp	Holly on-ramp	3490	B	3490	B	3370	B	3370	B	3410	B	2990	B	3040	B	2940	B	2740	A	2770	A	2800	A	2800	A
2WBGPO008	Holly on-ramp	SR 134 EB on-ramp	3770	B	3770	B	3640	B	3650	B	3690	B	3270	B	3300	B	3220	B	3000	B	3010	B	3050	B	3050	B
2WBGPO009	SR 134 EB on-ramp	SR 134 WB on-ramp	5210	D	5210	D	5060	C	5090	C	5120	C	4790	C	4790	C	4710	C	4350	C	4370	C	4410	C	4410	C
2WBGPO010	SR 134 WB on-ramp	Colorado on-ramp	7530	C	7530	C	7380	C	7420	C	7440	C	7120	C	7090	C	7030	C	6620	C	6660	C	6700	C	6700	C
2WBGPO011	Colorado on-ramp	York off-ramp	8840	F	8840	F	8690	D	8760	D	8770	D	8500	D	8460	D	8410	F	8020	D	8050	F	8100	F	8100	F
2WBGPO012	York off-ramp	Verdugo off-ramp	7710	E	7710	E	7570	E	7630	E	7620	E	7350	E	7310	E	7280	E	6890	D	6910	D	6970	D	6970	D
2WBGPO013	Verdugo off-ramp	Verdugo on-ramp	7130	D	7130	D	7070	D	7100	D	7060	D	6810	D	6770	D	6740	D	6360	D	6380	D	6430	D	6430	D
2WBGPO014	Verdugo on-ramp	San Fernando off-ramp	8560	F	8560	F	8500	F	8520	F	8480	F	8270	F	8220	F	8200	E	7870	E	7880	E	7910	E	7910	E
2WBGPO015	San Fernando off-ramp	San Fernando on-ramp	7720	E	7720	E	7590	D	7640	D	7670	D	7470	D	7410	D	7360	D	7060	D	7080	D	7110	D	7110	D
2WBGPO016	San Fernando on-ramp	Fletcher off-ramp	9130	F	9130	F	9010	F	9050	F	9100	F	8880	F	8840	F	8800	F	8490	F	8500	F	8550	F	8550	F
2WBGPO017	Fletcher off-ramp	I-5 off-ramp	7950	E	7950	E	7850	E	7890	E	7900	E	7680	D	7660	D	7620	D	7300	D	7320	D	7360	D	7360	D
2WBGPO018	I-5 off-ramp	NB I-5 on-ramp	2550	B	2550	B	2520	B	2540	B	2590	B	2450	B	2510	B	2470	B	2300	B	2260	B	2320	B	2320	B
2WBGPO019	NB I-5 on-ramp	SB I-5 on-ramp	2690	A	2690	A	2660	A	2680	A	2720	A	2600	A	2650	A	2620	A	2460	A	2420	A	2480	A	2480	A
2WBGPO020	SB I-5 on-ramp	South of SB I-5 on-ramp	3450	A	3450	A	3480	A	3490	A	3460	A	3450	A	3440	A	3420	A	3380	A	3320	A	3380	A	3380	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-29

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound SR 2
 SR 710 North Study, Los Angeles County, California

Westbound State Route 2 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2WBGPO001	North of Foothill on-ramp	Foothill on-ramp	2270	B	2270	B	2270	B	2260	B	2260	B	1960	A	1970	A	1960	A	1890	A	1910	A	1920	A	1920	A
2WBGPO002	Foothill on-ramp	EB I-210/Verdugo on-ramp	2850	B	2850	B	2860	B	2850	B	2850	B	2530	B	2540	B	2530	B	2460	B	2470	B	2480	B	2480	B
2WBGPO003	EB I-210/Verdugo on-ramp	Mountain off-ramp	3700	B	3700	B	3680	B	3670	B	3680	B	3250	B	3260	B	3240	B	3130	B	3160	B	3160	B	3160	B
2WBGPO004	Mountain off-ramp	Mountain on-ramp	3360	B	3360	B	3350	B	3340	B	3350	B	2920	B	2930	B	2910	B	2810	A	2840	A	2840	A	2840	A
2WBGPO005	Mountain on-ramp	SR 134 off-ramp	4040	B	4040	B	4020	B	4010	B	4010	D	3600	B	3600	B	3580	B	3440	A	3450	B	3460	B	3460	B
2WBGPO006	SR 134 off-ramp	Holly off-ramp	2120	B	2120	B	2110	B	2100	B	2110	B	1670	B	1680	B	1670	B	1520	B	1550	B	1550	B	1550	B
2WBGPO007	Holly off-ramp	Holly on-ramp	1570	A	1570	A	1550	A	1540	A	1550	A	1120	A	1130	A	1110	A	970	A	1000	A	1000	A	1000	A
2WBGPO008	Holly on-ramp	SR 134 EB on-ramp	1790	A	1790	A	1780	A	1770	A	1780	A	1330	A	1340	A	1320	A	1170	A	1200	A	1210	A	1210	A
2WBGPO009	SR 134 EB on-ramp	SR 134 WB on-ramp	2790	B	2790	B	2760	B	2740	B	2760	B	2340	B	2320	B	2320	B	1970	B	1960	B	2020	B	2020	B
2WBGPO010	SR 134 WB on-ramp	Colorado on-ramp	4270	B	4270	B	4210	B	4210	B	4230	B	3770	B	3750	B	3770	B	3380	A	3370	A	3430	A	3430	A
2WBGPO011	Colorado on-ramp	York off-ramp	5150	B	5150	B	5110	B	5090	B	5130	B	4710	B	4710	B	4710	B	4320	B	4320	B	4370	B	4370	B
2WBGPO012	York off-ramp	Verdugo off-ramp	4300	C	4300	C	4240	C	4220	C	4270	C	3850	C	3850	C	3850	C	3450	B	3460	B	3490	B	3490	B
2WBGPO013	Verdugo off-ramp	Verdugo on-ramp	3820	B	3820	B	3790	B	3780	B	3830	B	3430	B	3420	B	3430	B	3060	B	3050	B	3080	B	3080	B
2WBGPO014	Verdugo on-ramp	San Fernando off-ramp	4800	C	4800	C	4760	C	4750	C	4810	C	4420	C	4410	C	4420	C	4060	C	4060	C	4080	C	4080	C
2WBGPO015	San Fernando off-ramp	San Fernando on-ramp	4040	B	4040	B	4020	B	4000	B	4040	B	3650	B	3640	B	3640	B	3260	B	3270	B	3300	B	3300	B
2WBGPO016	San Fernando on-ramp	Fletcher off-ramp	4850	B	4850	B	4840	B	4790	B	4880	B	4520	B	4520	B	4520	B	4190	B	4190	B	4190	B	4190	B
2WBGPO017	Fletcher off-ramp	I-5 off-ramp	4190	B	4190	B	4190	B	4140	B	4230	B	3870	B	3870	B	3870	B	3540	B	3540	B	3550	B	3550	B
2WBGPO018	I-5 off-ramp	NB I-5 on-ramp	1610	A	1610	A	1600	A	1580	A	1620	A	1500	A	1470	A	1490	A	1370	A	1370	A	1390	A	1390	A
2WBGPO019	NB I-5 on-ramp	SB I-5 on-ramp	1700	A	1700	A	1690	A	1670	A	1710	A	1590	A	1560	A	1580	A	1460	A	1460	A	1480	A	1480	A
2WBGPO020	SB I-5 on-ramp	South of SB I-5 on-ramp	2220	A	2220	A	2210	A	2210	A	2200	A	2120	A	2110	A	2100	A	2020	A	2040	A	2030	A	2030	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-30

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound SR 60
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 60 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	3800	B	3800	B	3780	B	3760	B	3860	B	3780	B	3770	B	3810	B	3720	B	3700	B	3720	B	3720	B
60EBGP0002	SB I-5 off-ramp	SB I-5/US 101/Soto on-ramp	2320	B	2320	B	2360	B	2340	B	2370	B	2320	B	2310	B	2330	B	2240	B	2220	B	2250	B	2250	B
60EBGP0003	SB I-5/US 101/Soto on-ramp	Whittier/Lorena off-ramp	4430	C	4430	C	4290	B	4430	C	4430	C	4240	B	4300	B	4220	B	4220	B	4270	B	4260	B	4260	B
60EBGP0004	Whittier/Lorena off-ramp	Lorena on-ramp	3970	B	3970	B	3830	B	3960	B	3970	B	3790	B	3840	B	3760	B	3760	B	3810	B	3800	B	3800	B
60EBGP0005	Lorena on-ramp	Indiana on-ramp	4600	B	4600	B	4470	B	4610	B	4590	B	4440	B	4490	B	4410	B	4410	B	4460	B	4460	B	4460	B
60EBGP0006	Indiana on-ramp	Downey off-ramp	5210	B	5210	B	5100	B	5220	B	5190	B	5060	B	5100	B	5020	B	5020	B	5070	B	5060	B	5060	B
60EBGP0007	Downey off-ramp	Downey/Third on-ramp	4960	B	4960	B	4840	B	4980	B	4970	B	4830	B	4880	B	4780	B	4790	B	4860	B	4840	B	4840	B
60EBGP0008	Downey/Third on-ramp	I-710 off-ramp	5480	B	5480	B	5370	B	5490	B	5470	B	5320	B	5350	B	5270	B	5290	B	5360	B	5340	B	5340	B
60EBGP0009	I-710 off-ramp	I-710 on-ramp	4460	B	4460	B	4740	C	4620	C	4430	B	4270	B	4230	B	4230	B	4610	C	4560	B	4600	C	4600	C
60EBGP0010	I-710 on-ramp	Atlantic off-ramp	6580	C	6570	C	6520	C	6530	C	6600	C	6700	C	6700	C	6620	C	6900	C	6920	C	6870	C	6870	C
60EBGP0011	Atlantic off-ramp	SB Atlantic on-ramp	5660	B	5650	B	5630	B	5620	B	5670	B	5770	C	5770	C	5700	B	5950	C	5970	C	5940	C	5940	C
60EBGP0012	SB Atlantic on-ramp	NB Atlantic on-ramp	5900	B	5900	B	5900	B	5890	B	5900	B	6000	B	6010	B	5950	B	6170	B	6190	B	6150	B	6150	B
60EBGP0013	NB Atlantic on-ramp	Findlay off-ramp	6210	C	6200	C	6180	C	6180	C	6210	C	6310	C	6320	C	6250	C	6480	C	6490	C	6470	C	6470	C
60EBGP0014	Findlay off-ramp	Garfield/Wilcox off-ramp	5870	C	5870	C	5790	C	5820	C	5870	C	5940	C	5960	C	5860	C	6070	C	6130	C	6090	C	6090	C
60EBGP0015	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	5060	C	5060	C	5050	C	5030	C	5100	C	5140	C	5150	C	5100	C	5290	C	5300	C	5270	C	5270	C
60EBGP0016	Garfield/Wilcox on-ramp	Paramount off-ramp	6000	C	6000	C	5990	C	5970	C	6030	C	6060	C	6070	C	6020	C	6200	C	6210	C	6190	C	6190	C
60EBGP0017	Paramount off-ramp	SB Paramount on-ramp	5270	C	5270	C	5270	C	5260	C	5300	C	5320	C	5320	C	5280	C	5460	C	5460	C	5440	C	5440	C
60EBGP0018	SB Paramount on-ramp	NB Paramount on-ramp	5470	C	5460	C	5470	C	5450	C	5500	C	5510	C	5530	C	5490	C	5640	C	5640	C	5640	C	5640	C
60EBGP0019	NB Paramount on-ramp	San Gabriel off-ramp	5680	C	5680	C	5680	C	5660	C	5710	C	5730	C	5730	C	5700	C	5860	C	5840	C	5830	C	5830	C
60EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	5280	C	5280	C	5270	C	5260	C	5300	C	5310	C	5310	C	5280	C	5440	C	5420	C	5410	C	5410	C
60EBGP0021	San Gabriel on-ramp	Rosemead off-ramp	6030	D	6030	D	6030	D	6000	D	6060	D	6060	D	6050	D	6030	D	6170	D	6180	D	6150	D	6150	D
60EBGP0022	Rosemead off-ramp	SB Rosemead on-ramp	5590	C	5590	C	5600	C	5570	C	5620	C	5620	C	5620	C	5600	C	5750	C	5750	C	5720	C	5720	C
60EBGP0023	SB Rosemead on-ramp	NB Rosemead on-ramp	6310	C	6310	C	6320	C	6290	C	6340	C	6330	C	6340	C	6320	C	6440	C	6440	C	6400	C	6400	C
60EBGP0024	NB Rosemead on-ramp	Santa Anita off-ramp	6570	C	6560	C	6620	C	6570	C	6630	C	6620	C	6620	C	6580	C	6670	C	6670	C	6670	C	6670	C
60EBGP0025	Santa Anita off-ramp	SB Santa Anita on-ramp	6210	C	6210	C	6300	C	6250	C	6270	C	6260	C	6260	C	6220	C	6280	C	6290	C	6280	C	6280	C
60EBGP0026	SB Santa Anita on-ramp	NB Santa Anita on-ramp	6850	C	6850	C	6920	C	6870	C	6880	C	6880	C	6910	C	6870	C	6910	C	6930	C	6910	C	6910	C
60EBGP0027	NB Santa Anita on-ramp	Peck off-ramp	6910	C	6910	C	6970	C	6930	C	6940	C	6920	C	6930	C	6900	C	6950	C	6970	C	6960	C	6960	C
60EBGP0028	Peck off-ramp	Peck on-ramp	6530	C	6530	C	6590	C	6550	C	6560	C	6550	C	6550	C	6520	C	6600	C	6610	C	6590	C	6590	C
60EBGP0029	Peck on-ramp	I-605 off-ramp	6900	C	6900	C	6970	C	6930	C	6930	C	6920	C	6920	C	6890	C	6970	C	6980	C	6970	C	6970	C
60EBGP0030	I-605 off-ramp	SB I-605 on-ramp	4500	B	4500	B	4540	B	4530	B	4530	B	4560	B	4560	B	4520	B	4640	C	4650	C	4610	C	4610	C
60EBGP0031	SB I-605 on-ramp	NB I-605 on-ramp	5150	C	5150	C	5220	C	5220	C	5190	C	5170	C	5190	C	5140	C	5240	C	5250	C	5210	C	5210	C
60EBGP0032	NB I-605 on-ramp	East of NB I-605 on-ramp	6830	B	6830	B	6720	B	6730	B	6790	B	6840	B	6870	C	6820	B	6850	B	6870	C	6860	C	6860	C

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-31

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound SR 60
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 60 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	6590	C	6590	C	6530	C	6620	C	6620	C	6530	C	6500	C	6470	C	6400	C	6390	C	6410	C
60EBGP0002	SB I-5 off-ramp	SB I-5/US 101/Soto on-ramp	4670	C	4670	C	4690	C	4690	C	4640	C	4590	C	4570	C	4570	C	4470	C	4520	C	4510	C
60EBGP0003	SB I-5/US 101/Soto on-ramp	Whittier/Lorena off-ramp	9430	E	9430	E	9430	E	9440	E	9400	E	9200	E	9160	E	9170	E	9070	E	8980	D	9070	E
60EBGP0004	Whittier/Lorena off-ramp	Lorena on-ramp	8670	D	8670	D	8680	D	8690	D	8650	D	8450	D	8410	D	8430	D	8330	D	8230	D	8310	D
60EBGP0005	Lorena on-ramp	Indiana on-ramp	9400	D	9400	D	9400	D	9410	D	9380	D	9180	D	9140	D	9160	D	9070	D	8970	D	9060	D
60EBGP0006	Indiana on-ramp	Downey off-ramp	10,090	F	10,090	F	10,080	F	10,100	F	10,060	F	9880	F	9840	F	9840	F	9790	F	9680	F	9780	F
60EBGP0007	Downey off-ramp	Downey/Third on-ramp	9700	E	9700	E	9700	E	9720	E	9670	D	9460	D	9430	D	9440	D	9310	D	9220	D	9310	D
60EBGP0008	Downey/Third on-ramp	I-710 off-ramp	10,210	D	10,210	D	10,220	D	10,220	D	10,190	D	9960	D	9940	D	9930	D	9860	D	9770	D	9860	D
60EBGP0009	I-710 off-ramp	I-710 on-ramp	8290	E	8290	E	8300	E	8310	E	8320	E	8380	E	8350	E	8330	E	8600	E	8590	E	8590	E
60EBGP0010	I-710 on-ramp	Atlantic off-ramp	12,270	F	12,260	F	12,260	F	12,260	F	12,280	F	12,370	F	12,370	F	12,350	F	12,530	F	12,550	F	12,510	F
60EBGP0011	Atlantic off-ramp	SB Atlantic on-ramp	10,740	E	10,740	E	10,720	E	10,730	E	10,750	E	10,820	E	10,800	E	10,790	E	10,930	E	10,950	E	10,930	E
60EBGP0012	SB Atlantic on-ramp	NB Atlantic on-ramp	11,240	D	11,240	D	11,220	D	11,240	D	11,250	D	11,320	D	11,290	D	11,290	D	11,430	D	11,440	D	11,430	D
60EBGP0013	NB Atlantic on-ramp	Findlay off-ramp	11,710	F	11,710	F	11,690	F	11,700	F	11,710	F	11,780	F	11,760	F	11,750	F	11,870	F	11,880	F	11,870	F
60EBGP0014	Findlay off-ramp	Garfield/Wilcox off-ramp	11,150	F	11,150	F	11,140	F	11,160	F	11,140	F	11,190	F	11,190	F	11,180	F	11,260	F	11,280	F	11,270	F
60EBGP0015	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	9830	F	9830	F	9810	F	9820	F	9830	F	9840	F	9840	F	9830	F	9890	F	9900	F	9890	F
60EBGP0016	Garfield/Wilcox on-ramp	Paramount off-ramp	11,330	F	11,330	F	11,310	F	11,310	F	11,330	F	11,330	F	11,330	F	11,320	F	11,380	F	11,380	F	11,380	F
60EBGP0017	Paramount off-ramp	SB Paramount on-ramp	10,140	F	10,140	F	10,130	F	10,130	F	10,140	F	10,140	F	10,140	F	10,140	F	10,200	F	10,200	F	10,190	F
60EBGP0018	SB Paramount on-ramp	NB Paramount on-ramp	10,460	F	10,460	F	10,450	F	10,460	F	10,460	F	10,460	F	10,460	F	10,460	F	10,520	F	10,520	F	10,520	F
60EBGP0019	NB Paramount on-ramp	San Gabriel off-ramp	10,810	F	10,800	F	10,800	F	10,800	F	10,810	F	10,810	F	10,810	F	10,810	F	10,850	F	10,840	F	10,840	F
60EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	10,150	F	10,150	F	10,140	F	10,140	F	10,150	F	10,160	F	10,150	F	10,150	F	10,190	F	10,190	F	10,190	F
60EBGP0021	San Gabriel on-ramp	Rosemead off-ramp	11,080	F	11,080	F	11,060	F	11,060	F	11,080	F	11,100	F	11,100	F	11,090	F	11,120	F	11,130	F	11,110	F
60EBGP0022	Rosemead off-ramp	SB Rosemead on-ramp	10,380	F	10,380	F	10,360	F	10,360	F	10,370	F	10,390	F	10,400	F	10,380	F	10,420	F	10,420	F	10,410	F
60EBGP0023	SB Rosemead on-ramp	NB Rosemead on-ramp	11,270	F	11,270	F	11,270	F	11,260	F	11,270	F	11,290	F	11,310	F	11,290	F	11,310	F	11,310	F	11,300	F
60EBGP0024	NB Rosemead on-ramp	Santa Anita off-ramp	11,580	F	11,580	F	11,540	F	11,560	F	11,600	F	11,600	F	11,620	F	11,580	F	11,540	F	11,560	F	11,560	F
60EBGP0025	Santa Anita off-ramp	SB Santa Anita on-ramp	10,990	E	10,990	E	10,980	E	11,000	E	11,000	E	10,980	E	11,000	E	10,960	E	10,930	E	10,950	E	10,950	E
60EBGP0026	SB Santa Anita on-ramp	NB Santa Anita on-ramp	11,640	F	11,640	F	11,620	F	11,640	F	11,640	F	11,630	F	11,640	F	11,610	F	11,590	F	11,600	F	11,600	F
60EBGP0027	NB Santa Anita on-ramp	Peck off-ramp	11,690	F	11,690	F	11,680	F	11,690	F	11,690	F	11,670	F	11,690	F	11,660	F	11,640	F	11,650	F	11,650	F
60EBGP0028	Peck off-ramp	Peck on-ramp	11,060	F	11,060	F	11,040	F	11,060	F	11,070	F	11,050	F	11,080	F	11,030	F	11,040	F	11,050	F	11,050	F
60EBGP0029	Peck on-ramp	I-605 off-ramp	11,660	F	11,660	F	11,660	F	11,670	F	11,660	F	11,640	F	11,660	F	11,630	F	11,630	F	11,640	F	11,640	F
60EBGP0030	I-605 off-ramp	SB I-605 on-ramp	8060	E	8060	E	8070	E	8070	E	8060	E	8070	E	8100	E	8100	E	8090	E	8070	E	8070	E
60EBGP0031	SB I-605 on-ramp	NB I-605 on-ramp	9370	F	9370	F	9370	F	9360	F	9360	F	9350	F	9370	F	9370	F	9340	F	9330	F	9340	F
60EBGP0032	NB I-605 on-ramp	East of NB I-605 on-ramp	12,580	E	12,580	E	12,660	E	12,640	E	12,610	E	12,630	E	12,620	E	12,600	E	12,570	E	12,570	E	12,570	E

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-32
Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound SR 60
SR 710 North Study, Los Angeles County, California

Westbound State Route 60 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60WBG0001	East of I-605 off-ramp	I-605 off-ramp	10,490	E	10,490	E	10,300	E	10,310	E	10,400	E	10,420	E	10,400	E	10,410	E	10,400	E	10,410	E	10,410	E	10,410	E
60WBG0002	I-605 off-ramp	NB I-605 on-ramp	6010	E	6010	E	6090	E	6090	E	6090	E	6090	E	6080	E	6110	E	6110	E	6100	E	6080	E	6080	E
60WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	7560	D	7560	D	7590	D	7610	D	7580	D	7590	D	7570	D	7580	D	7580	D	7570	D	7580	D	7580	D
60WBG0004	SB I-605 on-ramp	Peck off-ramp	9970	E	9970	E	10000	E	9990	E	10000	E	9970	E	9990	E	9970	E	9990	E	9990	E	9980	E	9980	E
60WBG0005	Peck off-ramp	NB Peck on-ramp	9540	D	9540	D	9590	D	9590	D	9580	D	9560	D	9570	D	9560	D	9570	D	9570	D	9560	D	9560	D
60WBG0006	NB Peck on-ramp	SB Peck on-ramp	9880	E	9880	E	9940	E	9930	E	9920	E	9890	E	9900	E	9900	E	9900	E	9900	E	9880	E	9880	E
60WBG0007	SB Peck on-ramp	Santa Anita off-ramp	10,230	F	10,230	F	10,270	F	10,250	F	10,270	F	10,250	F	10,250	F	10,240	F	10,250	F	10,240	F	10,240	F	10,240	F
60WBG0008	Santa Anita off-ramp	NB Santa Anita on-ramp	9360	D	9360	D	9400	D	9380	D	9400	D	9380	D	9380	D	9370	D	9380	D	9370	D	9370	D	9370	D
60WBG0009	NB Santa Anita on-ramp	SB Santa Anita on-ramp	9420	D	9420	D	9460	D	9420	D	9460	D	9450	D	9440	D	9420	D	9430	D	9430	D	9420	D	9420	D
60WBG0010	SB Santa Anita on-ramp	Rosemead off-ramp	9930	E	9930	E	9940	E	9920	E	9950	E	9950	E	9930	E	9920	E	9910	E	9910	E	9900	E	9900	E
60WBG0011	Rosemead off-ramp	NB Rosemead on-ramp	8810	D	8800	D	8770	D	8750	D	8800	D	8800	D	8790	D	8790	D	8810	D	8810	D	8790	D	8790	D
60WBG0012	NB Rosemead on-ramp	SB Rosemead on-ramp	9040	D	9040	D	9020	D	8980	D	9030	D	9030	D	9030	D	9030	D	9050	D	9050	D	9020	D	9020	D
60WBG0013	SB Rosemead on-ramp	San Gabriel off-ramp	9630	E	9630	E	9600	E	9580	E	9630	E	9620	E	9620	E	9610	E	9630	E	9630	E	9610	E	9610	E
60WBG0014	San Gabriel off-ramp	San Gabriel on-ramp	8480	D	8480	D	8460	D	8440	D	8490	D	8480	D	8480	D	8470	D	8490	D	8500	D	8470	D	8470	D
60WBG0015	San Gabriel on-ramp	Paramount off-ramp	8840	D	8840	D	8820	D	8790	D	8850	D	8820	D	8830	D	8830	D	8860	D	8830	D	8810	D	8810	D
60WBG0016	Paramount off-ramp	NB Paramount on-ramp	8340	D	8340	D	8320	D	8300	D	8380	D	8330	D	8320	D	8320	D	8330	D	8320	D	8290	D	8290	D
60WBG0017	NB Paramount on-ramp	SB Paramount on-ramp	8870	D	8870	D	8860	D	8830	D	8900	D	8860	D	8850	D	8860	D	8900	D	8860	D	8830	D	8830	D
60WBG0018	SB Paramount on-ramp	Garfield/Wilcox off-ramp	9210	D	9210	D	9180	D	9160	D	9250	D	9200	D	9190	D	9200	D	9250	D	9200	D	9180	D	9180	D
60WBG0019	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	8050	E	8040	E	8030	E	8000	E	8090	E	8050	E	8030	E	8040	E	8100	E	8050	E	8030	E	8030	E
60WBG0020	Garfield/Wilcox on-ramp	Findlay on-ramp	10,260	E	10,260	E	10,270	E	10,210	E	10,300	E	10,290	E	10,250	E	10,260	E	10,290	E	10,230	E	10,250	E	10,250	E
60WBG0021	Findlay on-ramp	Atlantic off-ramp	10,580	F	10,580	F	10,560	F	10,520	F	10,580	F	10,610	F	10,560	F	10,580	F	10,660	F	10,570	F	10,560	F	10,560	F
60WBG0022	Atlantic off-ramp	NB Atlantic on-ramp	9920	E	9920	E	9890	E	9850	E	9930	E	9970	E	9910	E	9940	E	10,030	E	9920	E	9920	E	9920	E
60WBG0023	NB Atlantic on-ramp	SB Atlantic on-ramp	10,440	D	10,440	D	10,410	D	10,400	D	10,480	D	10,480	D	10,460	D	10,460	D	10,540	D	10,540	D	10,490	D	10,490	D
60WBG0024	SB Atlantic on-ramp	I-710 off-ramp	10,850	F	10,840	F	10,820	F	10,760	F	10,860	F	10,900	F	10,860	F	10,860	F	10,970	F	10,960	F	10,880	F	10,880	F
60WBG0025	I-710 off-ramp	I-710 on-ramp	8120	D	8120	D	8030	D	8040	D	8130	D	8210	D	8180	D	8200	D	8360	D	8360	D	8290	D	8290	D
60WBG0026	I-710 on-ramp	Downey off-ramp	9710	F	9700	F	9640	F	9670	F	9640	F	9560	F	9630	F	9590	F	9640	F	9610	F	9630	F	9630	F
60WBG0027	Downey off-ramp	Downey/Third on-ramp	9190	D	9190	D	9110	D	9140	D	9150	D	9070	D	9140	D	9100	D	9090	D	9070	D	9080	D	9080	D
60WBG0028	Downey/Third on-ramp	Indiana off-ramp	9420	F	9420	E	9330	E	9370	E	9370	E	9290	E	9360	E	9310	E	9320	E	9330	E	9310	E	9310	E
60WBG0029	Indiana off-ramp	Whittier/Lorena off-ramp	9010	D	9010	D	8940	D	8980	D	8990	D	8910	D	8970	D	8940	D	8960	D	8940	D	8930	D	8930	D
60WBG0030	Whittier/Lorena off-ramp	Lorena on-ramp	8540	D	8540	D	8450	D	8480	D	8510	D	8400	D	8450	D	8440	D	8410	D	8390	D	8400	D	8400	D
60WBG0031	Lorena on-ramp	NB I-5/US 101/Soto off-ramp	8800	D	8800	D	8720	D	8730	D	8770	D	8670	D	8720	D	8700	D	8690	D	8670	D	8670	D	8670	D
60WBG0032	NB I-5/US 101/Soto off-ramp	NB I-5 on-ramp	5790	F	5790	F	5730	F	5760	F	5770	F	5720	F	5770	F	5690	F	5670	F	5710	F	5680	F	5680	F
60WBG0033	NB I-5 on-ramp	Soto on-ramp	8620	E	8620	E	8540	E	8550	E	8600	E	8510	E	8530	E	8500	E	8440	E	8470	E	8430	E	8430	E
60WBG0034	Soto on-ramp	West of Soto on-ramp	8880	D	8880	D	8820	D	8810	D	8850	D	8760	D	8800	D	8760	D	8700	D	8730	D	8700	D	8700	D

NOTES:
Volume is reported in *mean* vehicles per hour (vph) for traffic demand
Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-33
Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound SR 60
SR 710 North Study, Los Angeles County, California

Westbound State Route 60 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60WBG0001	East of I-605 off-ramp	I-605 off-ramp	8670	D	8670	D	8670	D	8650	D	8670	D	8710	D	8710	D	8690	D	8680	D	8700	D	8700	D
60WBG0002	I-605 off-ramp	NB I-605 on-ramp	5190	D	5190	D	5230	D	5220	D	5210	D	5210	D	5200	D	5190	D	5220	D	5230	D	5230	D
60WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	6470	D	6470	D	6490	D	6480	D	6480	D	6460	D	6470	D	6420	D	6480	D	6490	D	6510	D
60WBG0004	SB I-605 on-ramp	Peck off-ramp	7990	D	7990	D	7980	D	7960	D	7980	D	7940	D	7930	D	7890	D	7990	D	8020	D	8000	D
60WBG0005	Peck off-ramp	NB Peck on-ramp	7580	C	7580	C	7570	C	7560	C	7590	C	7550	C	7530	C	7520	C	7610	C	7640	C	7620	C
60WBG0006	NB Peck on-ramp	SB Peck on-ramp	7890	C	7890	C	7880	C	7870	C	7900	C	7860	C	7840	C	7830	C	7920	C	7950	C	7930	C
60WBG0007	SB Peck on-ramp	Santa Anita off-ramp	8160	D	8160	D	8150	D	8140	D	8170	D	8130	D	8110	D	8090	D	8200	D	8220	D	8200	D
60WBG0008	Santa Anita off-ramp	NB Santa Anita on-ramp	7280	C	7280	C	7280	C	7260	C	7290	C	7260	C	7250	C	7230	C	7350	C	7360	C	7340	C
60WBG0009	NB Santa Anita on-ramp	SB Santa Anita on-ramp	7320	C	7320	C	7320	C	7290	C	7340	C	7320	C	7300	C	7290	C	7390	C	7410	C	7380	C
60WBG0010	SB Santa Anita on-ramp	Rosemead off-ramp	7770	D	7770	D	7780	D	7760	D	7800	D	7790	D	7770	D	7760	D	7860	D	7870	D	7850	D
60WBG0011	Rosemead off-ramp	NB Rosemead on-ramp	6670	C	6670	C	6640	C	6640	C	6660	C	6700	C	6680	C	6690	C	6840	C	6860	C	6810	C
60WBG0012	NB Rosemead on-ramp	SB Rosemead on-ramp	6880	C	6880	C	6860	C	6850	C	6870	C	6930	C	6910	C	6920	C	7090	C	7100	C	7060	C
60WBG0013	SB Rosemead on-ramp	San Gabriel off-ramp	7410	D	7410	D	7390	D	7380	D	7400	D	7490	D	7460	D	7470	D	7650	D	7670	D	7620	D
60WBG0014	San Gabriel off-ramp	San Gabriel on-ramp	6350	C	6350	C	6320	C	6310	C	6320	C	6400	C	6370	C	6380	C	6580	C	6590	C	6550	C
60WBG0015	San Gabriel on-ramp	Paramount off-ramp	6650	C	6650	C	6620	C	6610	C	6630	C	6700	C	6670	C	6680	C	6880	C	6890	D	6850	C
60WBG0016	Paramount off-ramp	NB Paramount on-ramp	6100	C	6100	C	6060	C	6050	C	6070	C	6140	C	6110	C	6120	C	6350	C	6350	C	6310	C
60WBG0017	NB Paramount on-ramp	SB Paramount on-ramp	6540	C	6540	C	6510	C	6490	C	6510	C	6590	C	6560	C	6570	C	6780	C	6780	C	6750	C
60WBG0018	SB Paramount on-ramp	Garfield/Wilcox off-ramp	6740	C	6740	C	6700	C	6690	C	6710	C	6790	C	6760	C	6770	C	6980	C	6990	C	6950	C
60WBG0019	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	5700	C	5690	C	5660	C	5660	C	5670	C	5770	C	5730	C	5740	C	5970	C	5980	C	5940	C
60WBG0020	Garfield/Wilcox on-ramp	Findlay on-ramp	6750	C	6750	C	6700	C	6700	C	6710	C	6830	C	6800	C	6820	C	7050	C	7040	C	7010	C
60WBG0021	Findlay on-ramp	Atlantic off-ramp	6870	C	6870	C	6830	C	6810	C	6840	C	7000	C	6980	C	6960	C	7210	C	7220	C	7170	C
60WBG0022	Atlantic off-ramp	NB Atlantic on-ramp	6140	C	6140	C	6100	C	6090	C	6120	C	6270	C	6250	C	6230	C	6470	C	6480	C	6430	C
60WBG0023	NB Atlantic on-ramp	SB Atlantic on-ramp	6520	B	6520	B	6490	B	6470	B	6510	B	6660	B	6640	B	6630	B	6850	B	6880	B	6830	B
60WBG0024	SB Atlantic on-ramp	I-710 off-ramp	6920	F	6920	F	6880	F	6870	F	6900	F	7070	F	7040	F	7020	F	7270	F	7280	F	7230	F
60WBG0025	I-710 off-ramp	I-710 on-ramp	4640	B	4640	B	4550	B	4550	B	4630	B	4610	B	4590	B	4560	B	4660	B	4680	B	4660	B
60WBG0026	I-710 on-ramp	Downey off-ramp	5990	C	5990	C	6000	C	6050	C	6000	C	5850	C	5860	C	5840	C	5820	C	5820	C	5850	C
60WBG0027	Downey off-ramp	Downey/Third on-ramp	5490	B	5490	B	5500	B	5550	B	5500	B	5340	B	5350	B	5330	B	5250	B	5250	B	5270	B
60WBG0028	Downey/Third on-ramp	Indiana off-ramp	5730	C	5730	C	5740	C	5790	C	5740	C	5590	C	5590	C	5570	C	5500	C	5500	C	5520	C
60WBG0029	Indiana off-ramp	Whittier/Lorena off-ramp	5340	C	5340	C	5340	C	5400	C	5350	C	5210	C	5220	C	5190	C	5190	C	5170	C	5210	C
60WBG0030	Whittier/Lorena off-ramp	Lorena on-ramp	4850	B	4850	B	4840	B	4890	B	4840	B	4680	B	4700	B	4660	B	4640	B	4630	B	4660	B
60WBG0031	Lorena on-ramp	NB I-5/US 101/Soto off-ramp	5060	B	5060	B	5050	B	5090	B	5050	B	4890	B	4900	B	4870	B	4850	B	4840	B	4870	B
60WBG0032	NB I-5/US 101/Soto off-ramp	NB I-5 on-ramp	2840	C	2840	C	2860	C	2860	C	2820	C	2730	C	2690	C	2700	C	2710	C	2730	C	2690	C
60WBG0033	NB I-5 on-ramp	Soto on-ramp	5150	C	5150	C	5140	C	5150	C	5120	C	5000	C	4960	C	4990	C	4940	C	4950	C	4920	C
60WBG0034	Soto on-ramp	West of Soto on-ramp	5340	B	5340	B	5330	B	5350	B	5320	B	5210	B	5170	B	5190	B	5150	B	5150	B	5130	B

NOTES:
Volume is reported in *mean* vehicles per hour (vph) for traffic demand
Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-34

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Northbound SR 110
 SR 710 North Study, Los Angeles County, California

Northbound State Route 110 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110NBGP0001	South of I-5/Riverside off-ramp	I-5/Riverside off-ramp	4730	B	4730	B	4760	C	4650	B	4760	B	4700	B	4730	B	4640	B	4600	B	4620	B	4610	B		
110NBGP0002	I-5/Riverside off-ramp	Figueroa off-ramp	2860	C	2860	C	2830	C	2830	C	2890	C	2880	C	2860	C	2810	B	2700	B	2720	B	2760	B		
110NBGP0003	Figueroa off-ramp	San Fernando on-ramp	2520	B	2520	B	2500	B	2500	B	2540	B	2530	B	2530	B	2480	B	2370	B	2380	B	2420	B		
110NBGP0004	San Fernando on-ramp	I-5/Avenue 26 on-ramp	2580	B	2580	B	2560	B	2560	B	2600	B	2590	B	2590	B	2540	B	2430	B	2440	B	2480	B		
110NBGP0005	I-5/Avenue 26 on-ramp	Avenue 43 off-ramp	3530	C	3530	C	3420	C	3420	C	3490	C	3400	C	3370	C	3360	C	3200	C	3200	C	3260	C		
110NBGP0006	Avenue 43 off-ramp	Avenue 43 on-ramp	3270	B	3270	B	3170	B	3170	B	3240	B	3130	B	3100	B	3070	B	2890	B	2860	B	2940	B		
110NBGP0007	Avenue 43 on-ramp	Avenue 52 off-ramp	3370	C	3370	C	3270	C	3270	C	3340	C	3220	C	3200	C	3170	C	3000	C	2970	C	3050	C		
110NBGP0008	Avenue 52 off-ramp	Avenue 52 on-ramp	3000	B	3000	B	2910	B	2930	B	2960	B	2860	B	2840	B	2810	B	2620	B	2590	B	2670	B		
110NBGP0009	Avenue 52 on-ramp	Via Marisol off-ramp	3120	C	3120	C	3030	C	3050	C	3080	C	2990	C	2980	C	2940	C	2750	C	2710	C	2800	C		
110NBGP0010	Via Marisol off-ramp	Via Marisol on-ramp	2810	B	2810	B	2750	B	2760	B	2800	B	2660	B	2650	B	2610	B	2420	B	2390	B	2480	B		
110NBGP0011	Via Marisol on-ramp	Avenue 60 off-ramp	2870	C	2870	C	2820	B	2830	C	2870	C	2730	B	2720	B	2680	B	2500	B	2470	B	2550	B		
110NBGP0012	Avenue 60 off-ramp	Avenue 60 on-ramp	2750	B	2750	B	2710	B	2710	B	2760	B	2620	B	2610	B	2560	B	2380	B	2350	B	2430	B		
110NBGP0013	Avenue 60 on-ramp	Marmion/Avenue 64 off-ramp	2860	C	2860	C	2800	C	2810	C	2860	C	2700	B	2690	B	2640	B	2460	B	2420	B	2510	B		
110NBGP0014	Marmion/Avenue 64 off-ramp	Bridgewell off-ramp	2350	B	2350	B	2340	B	2330	B	2390	B	2240	B	2220	B	2160	B	2000	B	1970	B	2030	B		
110NBGP0015	Bridgewell off-ramp	Orange Grove off-ramp	2310	B	2310	B	2290	B	2290	B	2340	B	2200	B	2180	B	2120	B	1950	B	1930	B	1990	B		
110NBGP0016	Orange Grove off-ramp	Orange Grove on-ramp	1690	A	1690	A	1690	A	1670	A	1750	A	1760	A	1760	A	1700	A	1650	A	1630	A	1670	A		
110NBGP0017	Orange Grove on-ramp	Fair Oaks off-ramp	1740	B	1740	B	1770	B	1750	B	1830	B	1810	B	1820	B	1760	B	1710	B	1680	B	1720	B		
110NBGP0018	Fair Oaks off-ramp	North of Fair Oaks off-ramp	1150	A	1150	A	1130	A	1110	A	1140	A	920	A	910	A	860	A	740	A	730	A	770	A		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-35

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Northbound SR 110
 SR 710 North Study, Los Angeles County, California

Northbound State Route 110 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110NBGP0001	South of I-5/Riverside off-ramp	I-5/Riverside off-ramp	7090	D	7090	D	7060	D	7090	D	7090	D	7070	D	7090	D	7040	D	7050	D	7040	D	7050	D		
110NBGP0002	I-5/Riverside off-ramp	Figueroa off-ramp	3930	C	3930	C	3920	C	3920	C	3970	C	3940	C	3920	C	3910	C	3900	C	3890	C	3920	C		
110NBGP0003	Figueroa off-ramp	San Fernando on-ramp	3500	B	3500	B	3490	B	3490	B	3540	B	3500	B	3490	B	3470	B	3460	B	3460	B	3490	B		
110NBGP0004	San Fernando on-ramp	I-5/Avenue 26 on-ramp	3600	C	3600	C	3590	C	3600	C	3630	C	3630	C	3610	C	3590	C	3590	C	3580	C	3620	C		
110NBGP0005	I-5/Avenue 26 on-ramp	Avenue 43 off-ramp	5590	E	5590	E	5570	E	5570	E	5600	E	5570	E	5560	E	5510	E	5390	E	5390	E	5430	E		
110NBGP0006	Avenue 43 off-ramp	Avenue 43 on-ramp	5100	D	5100	D	5110	D	5100	D	5120	D	5110	D	5110	D	5060	D	4930	D	4930	D	4970	D		
110NBGP0007	Avenue 43 on-ramp	Avenue 52 off-ramp	5290	D	5290	D	5270	D	5260	D	5290	D	5260	D	5270	D	5190	D	5020	D	5020	D	5070	D		
110NBGP0008	Avenue 52 off-ramp	Avenue 52 on-ramp	4580	C	4580	C	4570	C	4560	C	4600	C	4580	C	4590	C	4510	C	4340	C	4340	C	4400	C		
110NBGP0009	Avenue 52 on-ramp	Via Marisol off-ramp	4800	D	4800	D	4790	D	4770	D	4810	D	4790	D	4800	D	4720	D	4550	D	4550	D	4610	D		
110NBGP0010	Via Marisol off-ramp	Via Marisol on-ramp	4290	C	4290	C	4270	C	4250	C	4300	C	4280	C	4270	C	4200	C	4030	C	4010	C	4090	C		
110NBGP0011	Via Marisol on-ramp	Avenue 60 off-ramp	4380	D	4380	D	4360	D	4340	C	4390	C	4370	D	4370	D	4300	C	4140	C	4120	C	4200	C		
110NBGP0012	Avenue 60 off-ramp	Avenue 60 on-ramp	4200	C	4200	C	4180	C	4160	C	4210	C	4190	C	4190	C	4120	C	3950	C	3940	C	4020	C		
110NBGP0013	Avenue 60 on-ramp	Marmion/Avenue 64 off-ramp	4380	D	4380	D	4340	D	4320	D	4390	D	4310	D	4310	D	4230	D	4060	C	4050	C	4130	C		
110NBGP0014	Marmion/Avenue 64 off-ramp	Bridgewell off-ramp	3540	C	3540	C	3520	C	3480	C	3560	C	3540	C	3540	C	3460	C	3310	C	3300	C	3370	C		
110NBGP0015	Bridgewell off-ramp	Orange Grove off-ramp	3430	C	3430	C	3410	C	3370	C	3450	C	3430	C	3430	C	3350	C	3200	C	3190	C	3260	C		
110NBGP0016	Orange Grove off-ramp	Orange Grove on-ramp	2360	B	2360	B	2310	B	2290	B	2360	B	2480	B	2480	B	2420	B	2400	B	2390	B	2420	B		
110NBGP0017	Orange Grove on-ramp	Fair Oaks off-ramp	2450	B	2450	B	2420	B	2410	B	2470	B	2560	C	2560	C	2500	C	2480	C	2470	C	2500	C		
110NBGP0018	Fair Oaks off-ramp	North of Fair Oaks off-ramp	1620	A	1620	A	1620	A	1630	A	1600	A	1480	A	1480	A	1400	A	1200	A	1200	A	1270	A		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-36

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Southbound SR 110
 SR 710 North Study, Los Angeles County, California

Southbound State Route 110 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110SBGP0001	North of Fair Oaks off-ramp	Fair Oaks off-ramp	1390	A	1430	A	1550	A	1580	A	1530	A	1380	A	1400	A	1290	A	1090	A	1060	A	1130	A		
110SBGP0002	Fair Oaks off-ramp	NB Fair Oaks on-ramp	1270	A	1310	A	1330	A	1300	A	1290	A	1260	A	1260	A	1200	A	1030	A	1030	A	1070	A		
110SBGP0002A	NB Fair Oaks on-ramp	Fair Oaks on-ramp					1510	B	1490	B	1510	B	1760	B	1770	B	1700	B	1570	B	1570	B	1610	B		
110SBGP0003	Fair Oaks on-ramp	Orange Grove off-ramp	1890	B	1940	B	1800	B	1770	B	1810	B	2010	B	1990	B	1940	B	1770	B	1740	B	1810	B		
110SBGP0004	Orange Grove off-ramp	Orange Grove on-ramp	1810	B	1810	B	1720	B	1690	B	1740	B	1930	B	1910	B	1860	B	1690	B	1660	B	1730	B		
110SBGP0005	Orange Grove on-ramp	York off-ramp	3010	C	3010	C	2940	C	2900	C	2940	C	3120	C	3110	C	3050	C	2860	C	2830	C	2920	C		
110SBGP0006	York off-ramp	York on-ramp	2880	B	2880	B	2810	B	2780	B	2820	B	2930	B	2920	B	2860	B	2660	B	2640	B	2720	B		
110SBGP0007	York on-ramp	Marmion/Avenue 64 on-ramp	3490	C	3490	C	3420	C	3380	C	3420	C	3470	C	3470	C	3370	C	3070	C	3050	C	3160	C		
110SBGP0008	Marmion/Avenue 64 on-ramp	Avenue 60 off-ramp	4410	D	4410	D	4340	D	4310	D	4360	D	4360	D	4360	D	4280	D	3980	D	3960	D	4050	D		
110SBGP0009	Avenue 60 off-ramp	Avenue 60 on-ramp	4140	C	4140	C	4090	C	4050	C	4110	C	4100	C	4110	C	4030	C	3730	C	3700	C	3790	C		
110SBGP0010	Avenue 60 on-ramp	Via Marisol off-ramp	5000	D	5000	D	4910	D	4890	D	4950	D	4970	D	4970	D	4920	D	4630	D	4610	D	4700	D		
110SBGP0011	Via Marisol off-ramp	Via Marisol on-ramp	4740	C	4740	C	4650	C	4620	C	4680	C	4710	C	4700	C	4650	C	4360	C	4340	C	4430	C		
110SBGP0012	Via Marisol on-ramp	Avenue 52 off-ramp	5400	D	5400	D	5310	D	5290	D	5330	D	5330	D	5310	D	5280	D	4970	D	4950	D	5070	D		
110SBGP0013	Avenue 52 off-ramp	Avenue 52 on-ramp	5160	D	5160	D	5060	D	5030	D	5100	D	5080	D	5050	D	5030	D	4710	C	4700	C	4810	C		
110SBGP0014	Avenue 52 on-ramp	Avenue 43 off-ramp	6430	F	6430	F	6360	F	6310	F	6350	F	6350	F	6320	F	6320	F	6000	F	6020	F	6110	F		
110SBGP0015	Avenue 43 off-ramp	Avenue 43 on-ramp	6130	F	6130	F	6100	F	6050	F	6050	F	6060	F	6030	F	6040	F	5760	D	5780	D	5860	D		
110SBGP0016	Avenue 43 on-ramp	I-5 off-ramp	7110	F	7110	F	7080	F	7020	F	6990	F	7030	F	6990	F	7030	F	6760	F	6790	F	6850	F		
110SBGP0017	I-5 off-ramp	Avenue 26 off-ramp	5020	D	5020	D	5000	D	4970	D	5020	D	5040	D	5040	D	4980	D	4980	D	4910	D	5010	D		
110SBGP0018	Avenue 26 off-ramp	Figueroa on-ramp	4760	C	4760	C	4740	C	4710	C	4760	C	4790	C	4780	C	4720	C	4720	C	4650	C	4750	C		
110SBGP0019	Figueroa on-ramp	I-5/Riverside on-ramp	5820	D	5820	D	5790	D	5790	D	5810	D	5840	D	5840	D	5780	D	5770	D	5700	D	5800	D		
110SBGP0020	I-5/Riverside on-ramp	South of I-5/Riverside on-ramp	11,130	E	11,130	E	11,080	E	11,080	E	11,110	E	11,150	E	11,170	E	11,110	E	11,130	E	11,110	E	11,150	E		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-37

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Southbound SR 110
 SR 710 North Study, Los Angeles County, California

Southbound State Route 110 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110SBGP0001	North of Fair Oaks off-ramp	Fair Oaks off-ramp	1620	A	1430	A	1650	A	1670	A	1620	A	1510	A	1510	A	1490	A	1330	A	1320	A	1360	A		
110SBGP0002	Fair Oaks off-ramp	NB Fair Oaks on-ramp	1500	B	1310	A	1490	A	1500	B	1510	B	1450	A	1450	A	1430	A	1270	A	1270	A	1300	A		
110SBGP0002A	NB Fair Oaks on-ramp	Fair Oaks on-ramp					1860	B	1870	B	1890	B	1930	B	1950	B	1910	B	1770	B	1770	B	1800	B		
110SBGP0003	Fair Oaks on-ramp	Orange Grove off-ramp	1960	B	1940	B	2060	B	2060	B	2080	B	2080	B	2090	B	2050	B	1890	B	1880	B	1920	B		
110SBGP0004	Orange Grove off-ramp	Orange Grove on-ramp	1880	B	1880	B	1960	B	1960	B	1980	B	2010	B	2020	B	1970	B	1810	B	1810	B	1840	B		
110SBGP0005	Orange Grove on-ramp	York off-ramp	2650	C	2650	C	2710	C	2710	C	2740	C	2760	C	2760	C	2720	C	2570	C	2570	C	2600	C		
110SBGP0006	York off-ramp	York on-ramp	2540	B	2540	B	2540	B	2540	B	2570	B	2560	B	2560	B	2530	B	2390	B	2390	B	2420	B		
110SBGP0007	York on-ramp	Marmion/Avenue 64 on-ramp	2740	B	2740	B	2740	B	2730	B	2760	B	2710	B	2710	B	2680	B	2480	B	2480	B	2520	B		
110SBGP0008	Marmion/Avenue 64 on-ramp	Avenue 60 off-ramp	3200	C	3200	C	3200	C	3190	C	3220	C	3130	C	3140	C	3120	C	2920	C	2910	C	2950	C		
110SBGP0009	Avenue 60 off-ramp	Avenue 60 on-ramp	2960	B	2960	B	2970	B	2960	B	2990	B	2920	B	2930	B	2900	B	2720	B	2710	B	2750	B		
110SBGP0010	Avenue 60 on-ramp	Via Marisol off-ramp	3130	C	3130	C	3120	C	3120	C	3160	C	3110	C	3110	C	3090	C	2930	C	2910	C	2960	C		
110SBGP0011	Via Marisol off-ramp	Via Marisol on-ramp	2800	B	2800	B	2780	B	2780	B	2820	B	2760	B	2770	B	2750	B	2580	B	2570	B	2620	B		
110SBGP0012	Via Marisol on-ramp	Avenue 52 off-ramp	3040	C	3040	C	3030	C	3020	C	3060	C	2980	C	3000	C	2970	C	2800	B	2780	B	2830	B		
110SBGP0013	Avenue 52 off-ramp	Avenue 52 on-ramp	2790	B	2790	B	2760	B	2750	B	2790	B	2700	B	2720	B	2700	B	2530	B	2500	B	2560	B		
110SBGP0014	Avenue 52 on-ramp	Avenue 43 off-ramp	3270	C	3270	C	3210	C	3220	C	3250	C	3180	C	3200	C	3190	C	3050	C	3000	C	3070	C		
110SBGP0015	Avenue 43 off-ramp	Avenue 43 on-ramp	3120	B	3120	B	3070	B	3070	B	3110	B	3040	B	3060	B	3040	B	2910	B	2870	B	2940	B		
110SBGP0016	Avenue 43 on-ramp	I-5 off-ramp	3430	C	3430	C	3370	C	3380	C	3400	C	3360	C	3400	C	3390	C	3280	C	3220	C	3300	C		
110SBGP0017	I-5 off-ramp	Avenue 26 off-ramp	2270	B	2270	B	2290	B	2290	B	2280	B	2300	B	2290	B	2260	B	2190	B	2180	B	2220	B		
110SBGP0018	Avenue 26 off-ramp	Figueroa on-ramp	2150	A	2150	A	2170	A	2170	A	2150	A	2170	B	2160	A	2130	A	2060	A	2060	A	2100	A		
110SBGP0019	Figueroa on-ramp	I-5/Riverside on-ramp	2660	B	2660	B	2680	B	2680	B	2660	B	2680	B	2670	B	2650	B	2570	B	2570	B	2610	B		
110SBGP0020	I-5/Riverside on-ramp	South of I-5/Riverside on-ramp	5250	B	5250	B	5250	B	5270	B	5260	B	5260	B	5270	B	5240	B	5200	B	5180	B	5240	B		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-38
Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound SR 134
SR 710 North Study, Los Angeles County, California

Eastbound State Route 134 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	5390	C	5370	C	5220	C	5210	C	5260	C	5400	C	5420	C	5330	C	5360	C	5350	C	5380	C		
134EBGP0002	SB I-5 off-ramp	SB I-5 on-ramp	3000	B	3000	B	3030	B	2990	B	3020	B	3050	B	3060	B	3020	B	2970	B	2990	B	3000	B		
134EBGP0003	SB I-5 on-ramp	NB I-5/Zoo on-ramp	5480	C	5530	C	5470	C	5500	C	5580	C	5620	C	5610	C	5560	C	5710	C	5670	C	5700	C		
134EBGP0004	NB I-5/Zoo on-ramp	San Fernando off-ramp	6500	C	6530	C	6390	C	6400	C	6460	C	6430	C	6440	C	6400	C	6440	C	6390	C	6420	C		
134EBGP0005	San Fernando off-ramp	San Fernando on-ramp	5930	C	5960	C	5810	C	5820	C	5900	C	5870	C	5880	C	5840	C	5890	C	5830	C	5860	C		
134EBGP0006	San Fernando on-ramp	Pacific off-ramp	6390	C	6420	C	6280	C	6290	C	6360	C	6320	C	6330	C	6300	C	6360	C	6320	C	6320	C		
134EBGP0007	Pacific off-ramp	Central/Brand off-ramp	5870	D	5910	D	5770	D	5770	D	5840	D	5830	D	5840	D	5790	D	5860	D	5830	D	5820	D		
134EBGP0008	Central/Brand off-ramp	Pacific on-ramp	4990	C	5030	C	4890	C	4900	C	4960	C	4970	C	4990	C	4950	C	5010	C	4970	C	4980	C		
134EBGP0009	Pacific on-ramp	Brand on-ramp	5690	C	5720	C	5600	C	5610	C	5650	C	5680	C	5690	C	5650	C	5730	C	5700	C	5690	C		
134EBGP0010	Brand on-ramp	Glendale off-ramp	6830	C	6860	C	6740	C	6750	C	6790	C	6860	C	6860	C	6820	C	6920	C	6900	C	6880	C		
134EBGP0011	Glendale off-ramp	SB Glendale on-ramp	6030	C	6070	C	5940	C	5950	C	6010	C	6070	C	6070	C	6010	C	6110	C	6080	C	6070	C		
134EBGP0012	SB Glendale on-ramp	NB Glendale on-ramp	6200	C	6240	C	6110	C	6120	C	6180	C	6250	C	6240	C	6190	C	6290	C	6270	C	6250	C		
134EBGP0013	NB Glendale on-ramp	SR 2 off-ramp	6740	C	6780	C	6660	C	6660	C	6720	C	6810	C	6800	C	6740	C	6880	C	6870	C	6830	C		
134EBGP0014	SR 2 off-ramp	Harvey off-ramp	4790	C	4830	C	4730	C	4710	C	4790	C	4800	C	4820	C	4740	C	5030	C	5010	C	4980	C		
134EBGP0015	Harvey off-ramp	Harvey on-ramp	4180	B	4210	B	4080	B	4060	B	4150	B	4170	B	4180	B	4110	B	4380	B	4340	B	4320	B		
134EBGP0016	Harvey on-ramp	SB SR 2 on-ramp	4650	B	4690	B	4560	B	4550	B	4630	B	4650	B	4660	B	4590	B	4900	C	4870	C	4830	C		
134EBGP0017	SB SR 2 on-ramp	NB SR 2 on-ramp	4980	C	5010	C	4890	C	4880	C	4970	C	5010	C	5020	C	4940	C	5290	C	5270	C	5220	C		
134EBGP0018	NB SR 2 on-ramp	Figueroa off-ramp	6160	D	6190	D	6080	D	6080	D	6150	D	6170	D	6180	D	6110	D	6410	D	6410	D	6350	D		
134EBGP0019	Figueroa off-ramp	Figueroa /Colorado on-ramp	5610	C	5630	C	5510	C	5510	C	5570	C	5600	C	5600	C	5520	C	5840	C	5840	C	5780	C		
134EBGP0020	Figueroa /Colorado on-ramp	Linda Vista/San Rafael off-ramp	6340	D	6330	D	6260	D	6260	D	6290	D	6360	D	6370	D	6270	D	6710	D	6720	D	6630	D		
134EBGP0021	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	5930	C	5910	C	5850	C	5850	C	5870	C	5940	C	5950	C	5850	C	6290	C	6300	C	6210	C		
134EBGP0022	Linda Vista/San Rafael on-ramp	Colorado/Orange Grove off-ramp	6550	C	6570	C	6480	C	6480	C	6520	C	6650	C	6670	C	6560	C	7000	C	6990	C	6920	C		
134EBGP0023	Colorado/Orange Grove off-ramp	I-210 off-ramp	6110	C	6150	C	6090	C	6070	C	6100	C	5660	B	5680	B	5580	B	6020	C	6010	C	5930	C		
134EBGP0024	I-210 off-ramp	Orange Grove on-ramp	5390	C	5460	C	5280	C	5280	C	5360	C	5360	C	5390	C	5290	C	5240	C	5170	C	5260	C		
134EBGP0025	Orange Grove on-ramp	Fair Oaks/Marengo off-ramp	5780	C	5850	C	5700	C	5700	C	5770	C	5880	C	5900	C	5810	C	5710	C	5650	C	5730	C		
134EBGP0026	Fair Oaks/Marengo off-ramp	NB SR 710 on-ramp	5000	C	5050	C	4910	C	4920	C	4980	C	5050	C	5080	C	4990	C	4870	C	4810	C	4890	C		
134EBGP0027	NB SR 710 on-ramp	East of NB SR 710 on-ramp	5530	B	5560	B	5380	B	5380	B	5420	B	5960	C	6000	C	5990	C	6250	C	6180	C	6210	C		

NOTES:
Volume is reported in *mean* vehicles per hour (vph) for traffic demand
Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-39
Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound SR 134
SR 710 North Study, Los Angeles County, California

Eastbound State Route 134 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
134EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	6310	C	6310	C	6320	C	6300	C	6310	C	6350	C	6350	C	6340	C	6380	C	6390	C	6370	C
134EBGP0002	SB I-5 off-ramp	SB I-5 on-ramp	3540	C	3550	C	3570	C	3550	C	3550	C	3480	B	3480	B	3470	B	3380	B	3390	B	3390	B
134EBGP0003	SB I-5 on-ramp	NB I-5/Zoo on-ramp	6780	D	6830	D	6760	D	6760	D	6820	D	6850	D	6840	D	6850	D	6810	D	6820	D	6820	D
134EBGP0004	NB I-5/Zoo on-ramp	San Fernando off-ramp	8270	D	8320	D	8270	D	8280	D	8290	D	8250	D	8220	D	8240	D	8150	D	8150	D	8150	D
134EBGP0005	San Fernando off-ramp	San Fernando on-ramp	7730	D	7770	D	7730	D	7740	D	7760	D	7750	D	7730	D	7730	D	7640	D	7630	D	7650	D
134EBGP0006	San Fernando on-ramp	Pacific off-ramp	8240	D	8290	D	8250	D	8250	D	8280	D	8270	D	8250	D	8250	D	8190	D	8180	D	8180	D
134EBGP0007	Pacific off-ramp	Central/Brand off-ramp	7610	E	7660	E	7620	E	7620	E	7650	E	7640	E	7620	E	7620	E	7560	E	7550	E	7550	E
134EBGP0008	Central/Brand off-ramp	Pacific on-ramp	6480	C	6530	D	6490	D	6490	D	6520	D	6510	D	6490	D	6490	D	6430	C	6420	C	6420	C
134EBGP0009	Pacific on-ramp	Brand on-ramp	7290	D	7340	D	7300	D	7310	D	7340	D	7350	D	7320	D	7320	D	7230	D	7260	D	7250	D
134EBGP0010	Brand on-ramp	Glendale off-ramp	8560	D	8610	D	8570	D	8570	D	8610	D	8620	D	8600	D	8590	D	8510	D	8540	D	8530	D
134EBGP0011	Glendale off-ramp	SB Glendale on-ramp	7480	D	7530	D	7490	D	7480	D	7520	D	7550	D	7530	D	7510	D	7440	D	7460	D	7460	D
134EBGP0012	SB Glendale on-ramp	NB Glendale on-ramp	7690	C	7730	C	7700	C	7700	C	7750	C	7770	C	7740	C	7710	C	7750	C	7680	C	7720	C
134EBGP0013	NB Glendale on-ramp	SR 2 off-ramp	8320	F	8360	F	8330	F	8340	F	8380	F	8430	F	8400	F	8370	F	8420	F	8360	F	8410	F
134EBGP0014	SR 2 off-ramp	Harvey off-ramp	5940	D	5980	D	5970	D	5980	D	6020	D	6040	D	6040	D	5980	D	6200	D	6190	D	6200	D
134EBGP0015	Harvey off-ramp	Harvey on-ramp	5090	C	5130	C	5090	C	5110	C	5140	C	5170	C	5160	C	5080	C	5290	C	5300	C	5290	C
134EBGP0016	Harvey on-ramp	SB SR 2 on-ramp	5670	C	5710	C	5670	C	5690	C	5710	C	5730	C	5730	C	5640	C	5870	C	5880	C	5850	C
134EBGP0017	SB SR 2 on-ramp	NB SR 2 on-ramp	6050	C	6080	C	6050	C	6060	C	6080	C	6120	C	6120	C	6020	C	6260	C	6250	C	6240	C
134EBGP0018	NB SR 2 on-ramp	Figueroa off-ramp	7440	E	7470	E	7440	E	7480	E	7460	E	7530	E	7520	E	7420	E	7600	E	7570	E	7570	E
134EBGP0019	Figueroa off-ramp	Figueroa /Colorado on-ramp	6680	D	6700	D	6720	D	6750	D	6750	D	6820	D	6830	D	6900	D	6980	D	6960	D	7070	D
134EBGP0020	Figueroa /Colorado on-ramp	Linda Vista/San Rafael off-ramp	7470	E	7460	E	7500	E	7470	E	7480	E	7630	E	7620	E	7550	E	7750	E	7790	E	7740	E
134EBGP0021	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	6910	D	6890	D	6940	D	6910	D	6910	D	7070	D	7060	D	6990	D	7240	D	7270	D	7220	D
134EBGP0022	Linda Vista/San Rafael on-ramp	Colorado/Orange Grove off-ramp	7520	D	7540	D	7540	D	7510	D	7560	D	7810	D	7810	D	7730	D	7900	D	7910	D	7890	D
134EBGP0023	Colorado/Orange Grove off-ramp	I-210 off-ramp	6910	C	6950	C	6940	C	6910	C	6960	C	6740	C	6730	C	6670	C	6880	C	6900	C	6880	C
134EBGP0024	I-210 off-ramp	Orange Grove on-ramp	6030	C	6100	C	6060	C	6000	C	6100	C	6060	C	6030	C	6000	C	5760	C	5740	C	5810	C
134EBGP0025	Orange Grove on-ramp	Fair Oaks/Marengo off-ramp	6390	C	6460	C	6410	C	6350	C	6450	C	6440	C	6410	C	6370	C	6150	C	6130	C	6200	C
134EBGP0026	Fair Oaks/Marengo off-ramp	NB SR 710 on-ramp	5420	C	5480	C	5440	C	5380	C	5470	C	5450	C	5430	C	5390	C	5180	C	5160	C	5230	C
134EBGP0027	NB SR 710 on-ramp	East of NB SR 710 on-ramp	6030	C	6050	C	5950	C	5950	C	5990	C	6140	C	6130	C	6130	C	6440	C	6440	C	6400	C

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-40

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound SR 134
 SR 710 North Study, Los Angeles County, California

Westbound State Route 134 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134WBG0001	East of SR 710 off-ramp	SR 710 off-ramp	6310	C	6340	C	6150	C	6180	C	6290	C	6500	C	5990	C	5990	C	6370	C	6340	C	6340	C	6340	C
134WBG0002	SR 710 off-ramp	Fair Oaks on-ramp	5150	C	5180	C	5090	C	5000	C	5120	C	5310	C	5300	C	5290	C	5050	C	5050	C	5100	C	5100	C
134WBG0003	Fair Oaks on-ramp	Orange Grove off-ramp	5870	C	5900	C	5830	C	5730	C	5830	C	6080	C	6060	C	6050	C	5820	C	5820	C	5860	C	5860	C
134WBG0004	Orange Grove off-ramp	I-210/SR 710 on-ramp	5550	C	5580	C	5400	C	5400	C	5510	C	5540	C	5520	C	5520	C	5370	C	5370	C	5380	C	5380	C
134WBG0005	I-210/SR 710 on-ramp	Colorado/Orange Grove on-ramp	7050	C	7080	C	6870	C	6880	C	7050	C	6680	C	6680	C	6640	C	6870	C	6950	C	6880	C	6880	C
134WBG0006	Colorado/Orange Grove on-ramp	Linda Vista/San Rafael off-ramp	7660	C	7690	C	7480	C	7490	C	7620	C	7570	C	7550	C	7540	C	7690	C	7790	D	7740	C	7740	C
134WBG0007	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	7360	D	7390	D	7180	D	7200	D	7330	D	7220	D	7200	D	7200	D	7340	D	7450	D	7400	D	7400	D
134WBG0008	Linda Vista/San Rafael on-ramp	Figueroa/Colorado off-ramp	7570	E	7590	E	7400	E	7420	E	7540	E	7570	E	7560	E	7520	E	7700	E	7790	E	7710	E	7710	E
134WBG0009	Figueroa/Colorado off-ramp	Figueroa on-ramp	6780	D	6810	D	6620	D	6630	D	6750	D	6750	D	6740	D	6710	D	6850	D	6920	D	6850	D	6850	D
134WBG0010	Figueroa on-ramp	SR 2 off-ramp	7260	D	7290	D	7100	D	7110	D	7230	D	7250	D	7250	D	7210	D	7320	D	7380	D	7340	D	7340	D
134WBG0011	SR 2 off-ramp	Harvey off-ramp	5530	C	5560	C	5420	C	5410	C	5520	C	5530	C	5540	C	5500	C	5630	C	5700	D	5640	C	5640	C
134WBG0012	Harvey off-ramp	NB SR 2 on-ramp	5080	C	5110	C	4970	C	4970	C	5070	C	5070	C	5090	C	5050	C	5160	C	5220	C	5170	C	5170	C
134WBG0013	NB SR 2 on-ramp	Harvey on-ramp	5880	C	5910	C	5750	C	5760	C	5870	C	5970	C	5960	C	5920	C	5940	C	5940	C	5950	C	5950	C
134WBG0014	Harvey on-ramp	SB SR 2 on-ramp	6880	D	6910	D	6770	D	6780	D	6900	D	6990	D	6980	D	6950	D	6950	D	6950	D	6960	D	6960	D
134WBG0015	SB SR 2 on-ramp	Glendale off-ramp	8550	D	8590	D	8450	D	8470	D	8580	D	8660	D	8650	D	8620	D	8640	D	8630	D	8640	D	8640	D
134WBG0016	Glendale off-ramp	Glendale on-ramp	8000	E	8040	E	7900	E	7910	E	8020	E	8090	E	8080	E	8060	E	8060	E	8060	E	8060	E	8060	E
134WBG0017	Glendale on-ramp	Brand/Central off-ramp	8990	D	9020	E	8900	D	8910	D	9020	D	9080	E	9070	E	9050	E	9060	E	9060	E	9060	E	9060	E
134WBG0018	Brand/Central off-ramp	Pacific off-ramp	8000	E	8030	E	7900	E	7900	E	8010	E	8000	E	7990	E	7980	E	7950	E	7940	E	7950	E	7950	E
134WBG0019	Pacific off-ramp	Central on-ramp	7510	D	7550	D	7400	D	7390	D	7520	D	7510	D	7510	D	7490	D	7440	D	7440	D	7450	D	7450	D
134WBG0020	Central on-ramp	Pacific on-ramp	8420	F	8450	F	8310	E	8300	E	8420	F	8410	F	8400	F	8400	F	8340	E	8340	E	8350	E	8350	E
134WBG0021	Pacific on-ramp	San Fernando off-ramp	9110	E	9140	E	9010	D	9000	D	9120	E	9090	E	9100	E	9080	E	9030	D	9020	D	9030	D	9030	D
134WBG0022	San Fernando off-ramp	I-5 off-ramp	8550	D	8590	D	8440	D	8430	D	8560	D	8530	D	8540	D	8520	D	8450	D	8440	D	8460	D	8460	D
134WBG0023	I-5 off-ramp	San Fernando on-ramp	4280	E	4280	E	4300	E	4290	E	4280	E	4270	E	4270	E	4230	E	4160	E	4180	E	4210	E	4210	E
134WBG0024	San Fernando on-ramp	NB I-5 on-ramp	4670	F	4660	F	4690	F	4670	F	4670	F	4650	F	4640	F	4620	F	4540	F	4560	F	4590	F	4590	F
134WBG0025	NB I-5 on-ramp	West of NB I-5 on-ramp	7660	D	7650	D	7690	D	7710	D	7680	D	7780	D	7780	D	7750	D	7800	D	7790	D	7800	D	7800	D

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-41

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound SR 134
 SR 710 North Study, Los Angeles County, California

Westbound State Route 134 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134WBG0001	East of SR 710 off-ramp	SR 710 off-ramp	6660	C	6680	C	6640	C	6640	C	6660	C	6500	C	6530	C	6570	C	6280	C	6210	C	6350	C		
134WBG0002	SR 710 off-ramp	Fair Oaks on-ramp	5670	C	5690	C	5660	C	5650	C	5690	C	5790	C	5860	C	5710	C	5530	C	5490	C	5660	C		
134WBG0003	Fair Oaks on-ramp	Orange Grove off-ramp	6400	C	6420	C	6380	C	6380	C	6410	C	6550	C	6610	C	6470	C	6280	C	6240	C	6410	C		
134WBG0004	Orange Grove off-ramp	I-210/SR 710 on-ramp	5990	C	6010	C	5980	C	5970	C	6000	C	5980	C	6060	C	5890	C	5690	C	5660	C	5830	C		
134WBG0005	I-210/SR 710 on-ramp	Colorado/Orange Grove on-ramp	7290	C	7300	C	7270	C	7270	C	7320	C	7080	C	7070	C	7020	C	7560	C	7710	C	7430	C		
134WBG0006	Colorado/Orange Grove on-ramp	Linda Vista/San Rafael off-ramp	7960	D	7970	D	7950	D	7940	D	7990	D	7910	D	7920	D	7870	D	8400	D	8530	D	8260	D		
134WBG0007	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	7480	D	7500	D	7480	D	7470	D	7510	D	7440	D	7440	D	7390	D	7880	D	7980	E	7740	D		
134WBG0008	Linda Vista/San Rafael on-ramp	Figueroa/Colorado off-ramp	7730	E	7740	E	7720	E	7710	E	7750	E	7880	E	7870	E	7780	E	8280	E	8370	E	8130	E		
134WBG0009	Figueroa/Colorado off-ramp	Figueroa on-ramp	6500	D	6510	D	6490	D	6480	C	6520	D	6650	D	6640	D	6560	D	6920	D	7000	D	6800	D		
134WBG0010	Figueroa on-ramp	SR 2 off-ramp	6930	D	6950	D	6920	D	6910	D	6960	D	7070	D	7070	D	7000	D	7280	D	7340	D	7220	D		
134WBG0011	SR 2 off-ramp	Harvey off-ramp	5460	D	5480	D	5460	D	5450	D	5480	D	5560	D	5560	D	5490	D	5780	D	5850	D	5710	D		
134WBG0012	Harvey off-ramp	NB SR 2 on-ramp	4730	C	4750	C	4730	C	4710	B	4760	C	4870	C	4860	C	4790	C	5080	C	5140	C	5010	C		
134WBG0013	NB SR 2 on-ramp	Harvey on-ramp	5380	C	5400	C	5390	C	5370	C	5410	C	5640	C	5660	C	5550	C	5880	C	5880	C	5810	C		
134WBG0014	Harvey on-ramp	SB SR 2 on-ramp	6100	C	6120	C	6110	C	6090	C	6130	C	6340	C	6360	C	6260	C	6560	D	6570	D	6500	D		
134WBG0015	SB SR 2 on-ramp	Glendale off-ramp	7420	F	7440	F	7430	F	7410	F	7450	F	7660	F	7680	F	7570	F	7860	F	7880	F	7810	F		
134WBG0016	Glendale off-ramp	Glendale on-ramp	6360	C	6390	C	6370	C	6350	C	6390	C	6550	D	6580	D	6470	C	6740	D	6770	D	6690	D		
134WBG0017	Glendale on-ramp	Brand/Central off-ramp	7390	F	7420	F	7400	F	7380	F	7410	F	7570	F	7580	F	7480	F	7740	F	7760	F	7670	F		
134WBG0018	Brand/Central off-ramp	Pacific off-ramp	6010	D	6040	D	6010	D	5990	D	6040	D	6140	D	6150	D	6070	D	6240	D	6270	D	6190	D		
134WBG0019	Pacific off-ramp	Central on-ramp	5440	C	5470	C	5440	C	5420	C	5470	C	5560	C	5560	C	5490	C	5640	C	5660	C	5580	C		
134WBG0020	Central on-ramp	Pacific on-ramp	7050	D	7090	D	7060	D	7030	D	7090	D	7170	D	7160	D	7100	D	7320	D	7410	D	7210	D		
134WBG0021	Pacific on-ramp	San Fernando off-ramp	7740	D	7780	D	7750	D	7720	D	7780	D	7850	D	7840	D	7790	D	7990	D	8080	D	7880	D		
134WBG0022	San Fernando off-ramp	I-5 off-ramp	7320	C	7360	C	7320	C	7290	C	7360	C	7430	C	7420	C	7370	C	7540	C	7630	C	7440	C		
134WBG0023	I-5 off-ramp	San Fernando on-ramp	3630	D	3610	D	3630	D	3630	D	3620	D	3590	D	3570	D	3550	D	3650	D	3660	D	3590	D		
134WBG0024	San Fernando on-ramp	NB I-5 on-ramp	3990	E	3970	E	3980	E	3990	E	3970	E	3950	D	3940	D	3900	D	4020	E	4030	E	3960	E		
134WBG0025	NB I-5 on-ramp	West of NB I-5 on-ramp	6280	C	6230	C	6260	C	6280	C	6250	C	6270	C	6270	C	6250	C	6410	C	6410	C	6350	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-42

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Northbound I-5
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 5 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5NBGP0001	South of Eastern off-ramp	Eastern off-ramp	8620	D	8620	D	8620	D	8640	D	8640	D	8710	D	8710	D	8680	D	8670	D	8690	D	8740	D	8740	D
5NBGP0002	Eastern off-ramp	I-710 off-ramp	8460	D	8460	D	8460	D	8480	D	8510	D	8580	D	8580	D	8550	D	8540	D	8560	D	8610	D	8610	D
5NBGP0003	I-710 off-ramp	I-710 on-ramp	7270	D	7270	D	7270	D	7270	D	7290	D	7180	D	7170	D	7160	D	7090	D	7110	D	7120	D	7120	D
5NBGP0004	I-710 on-ramp	Downey on-ramp	10,730	E	10,730	E	10,750	E	10,760	E	10,830	E	10,730	E	10,650	E	10,670	E	10,630	E	10,640	E	10,680	E	10,680	E
5NBGP0005	Downey on-ramp	Indiana off-ramp	11,040	F	11,040	F	11,050	F	11,040	F	11,140	F	11,080	F	10,980	F	11,010	F	11,010	F	10,990	F	11,050	F	11,050	F
5NBGP0006	Indiana off-ramp	Indiana on-ramp	10,790	E	10,790	E	10,820	E	10,820	E	10,930	F	10,850	E	10,750	E	10,800	E	10,770	E	10,760	E	10,750	E	10,750	E
5NBGP0007	Indiana on-ramp	Calzona off-ramp	11,060	F	11,060	F	11,060	F	11,070	F	11,130	F	11,040	F	10,980	F	11,010	F	10,990	F	10,950	F	10,990	F	10,990	F
5NBGP0008	Calzona off-ramp	Calzona on-ramp	11,000	F	11,000	F	11,010	F	11,010	F	11,070	F	10,990	F	10,930	F	10,960	F	10,940	F	10,900	E	10,940	F	10,940	F
5NBGP0009	Calzona on-ramp	Grand Vista off-ramp	11,150	F	11,150	F	11,140	F	11,150	F	11,200	F	11,150	F	11,080	F	11,110	F	11,120	F	11,060	F	11,120	F	11,120	F
5NBGP0010	Grand Vista off-ramp	US 101 NB off-ramp	11,010	F	11,010	F	11,010	F	11,020	F	11,070	F	11,020	F	10,950	F	10,980	F	10,990	F	10,930	F	10,990	F	10,990	F
5NBGP0011	US 101 NB off-ramp	I-10 WB off-ramp	7170	D	7170	D	7140	D	7140	D	7180	D	7130	D	7060	D	7130	D	7080	D	7050	D	7090	D	7090	D
5NBGP0012	I-10 WB off-ramp	Soto off-ramp	4320	F	4320	F	4320	F	4340	F	4330	F	4320	F	4290	F	4310	F	4290	F	4280	F	4330	F	4330	F
5NBGP0013	Soto off-ramp	SR 60 WB on-ramp	4120	E	4120	E	4150	E	4140	E	4130	E	4100	E	4070	E	4060	E	4040	E	4020	E	4080	E	4080	E
5NBGP0014	SR 60 WB on-ramp	Seventh off-ramp	5480	F	5480	F	5500	F	5500	F	5550	F	5440	F	5430	F	5460	F	5480	F	5400	F	5460	F	5460	F
5NBGP0015	Seventh off-ramp	Seventh on-ramp	5340	F	5340	F	5390	F	5370	F	5370	F	5280	F	5280	F	5290	F	5320	F	5250	F	5310	F	5310	F
5NBGP0016	Seventh on-ramp	I-10 EB on-ramp	5880	F	5880	F	5920	F	5880	F	5890	F	5820	F	5800	F	5810	F	5850	F	5780	F	5830	F	5830	F
5NBGP0017	I-10 EB on-ramp	Fourth off-ramp	10,040	E	10,040	E	10,090	E	10,060	E	10,000	E	10,010	E	9990	E	9980	E	10,090	E	9990	E	10,050	E	10,050	E
5NBGP0018	Fourth off-ramp	Fourth on-ramp	9860	E	9860	E	9900	E	9870	E	9810	E	9820	E	9810	E	9800	E	9910	E	9820	E	9880	E	9880	E
5NBGP0019	Fourth on-ramp	Cesar Chavez off-ramp	10,420	F	10,420	F	10,440	F	10,450	F	10,430	F	10,420	F	10,400	F	10,430	F	10,540	F	10,440	F	10,530	F	10,530	F
5NBGP0020	Cesar Chavez off-ramp	I-10 EB off-ramp	10,040	E	10,040	E	10,040	E	10,070	E	10,050	E	10,050	E	10,040	E	10,060	E	10,190	E	10,080	E	10,180	E	10,180	E
5NBGP0021	I-10 EB off-ramp	State on-ramp	7920	E	7920	E	7950	E	7950	E	7970	E	7910	E	7860	E	7930	E	7960	E	7930	E	7940	E	7940	E
5NBGP0022	State on-ramp	I-10 WB on-ramp	8200	F	8200	F	8240	F	8240	F	8230	F	8200	F	8140	E	8190	F	8280	F	8140	E	8240	F	8240	F
5NBGP0023	I-10 WB on-ramp	Marengo on-ramp	10,650	E	10,650	E	10,570	E	10,600	E	10,610	E	10,330	E	10,320	E	10,310	E	10,080	E	9970	E	10,090	E	10,090	E
5NBGP0024	Marengo on-ramp	Main Street off-ramp	11,000	F	11,000	F	10,920	F	10,950	F	10,950	F	10,710	F	10,680	F	10,700	F	10,480	F	10,370	F	10,500	F	10,500	F
5NBGP0025	Main Street off-ramp	Broadway off-ramp	10,590	E	10,590	E	10,490	E	10,520	E	10,590	E	10,290	E	10,260	E	10,260	E	10,050	E	9940	E	10,080	E	10,080	E
5NBGP0026	Broadway off-ramp	SR 110 NB off-ramp	9890	F	9890	F	9840	F	9920	F	9870	F	9710	F	9670	F	9670	F	9470	F	9390	F	9500	F	9500	F
5NBGP0027	SR 110 NB off-ramp	Pasadena/Broadway on-ramp	8610	E	8610	E	8590	E	8650	E	8620	E	8540	E	8520	E	8510	E	8400	E	8290	E	8410	E	8410	E
5NBGP0028	Pasadena/Broadway on-ramp	SR 110 SB on-ramp	9010	F	9010	F	9020	F	9020	F	8990	F	8960	F	8950	F	8950	F	8860	F	8750	F	8860	F	8860	F
5NBGP0029	SR 110 SB on-ramp	Riverside/SR 110 NB on-ramp	9300	F	9300	F	9320	F	9320	F	9280	F	9260	F	9250	F	9260	F	9200	F	9080	F	9180	F	9180	F
5NBGP0030	Riverside/SR 110 NB on-ramp	Stadium Way off-ramp	11,390	F	11,390	F	11,330	F	11,380	F	11,350	F	11,360	F	11,320	F	11,340	F	11,290	F	11,140	F	11,290	F	11,290	F
5NBGP0031	Stadium Way off-ramp	Stadium Way on-ramp	11,150	F	11,150	F	11,080	F	11,130	F	11,130	F	11,090	F	11,050	F	11,050	F	10,980	F	10,840	E	10,990	F	10,990	F
5NBGP0032	Stadium Way on-ramp	SR 2 NB off-ramp	11,300	F	11,300	F	11,330	F	11,270	F	11,310	F	11,180	F	11,190	F	11,150	F	11,110	F	10,980	F	11,060	F	11,060	F
5NBGP0033	SR 2 NB off-ramp	SR 2 SB off-ramp	9410	F	9410	F	9470	F	9450	F	9390	F	9510	F	9490	F	9470	F	9560	F	9490	F	9520	F	9520	F
5NBGP0034	SR 2 SB off-ramp	SR 2 on-ramp	9460	F	9460	F	9510	F	9500	F	9440	F	9550	F	9530	F	9510	F	9580	F	9520	F	9540	F	9540	F
5NBGP0035	SR 2 on-ramp	Fletcher on-ramp	10,200	E	10,200	E	10,260	E	10,230	E	10,190	E	10,250	E	10,260	E	10,230	E	10,280	E	10,240	E	10,260	E	10,260	E
5NBGP0036	Fletcher on-ramp	Glendale off-ramp	10,550	F	10,550	F	10,590	F	10,580	F	10,540	E	10,590	F	10,610	F	10,580	F	10,620	F	10,570	F	10,610	F	10,610	F
5NBGP0037	Glendale off-ramp	Glendale on-ramp	9580	F	9580	F	9610	F	9610	F	9570	F	9650	F	9660	F	9640	F	9690	F	9640	F	9660	F	9660	F
5NBGP0038	Glendale on-ramp	Los Feliz off-ramp	9800	F	9800	F	9820	F	9840	F	9790	F	9880	F	9880	F	9870	F	9910	F	9870	F	9890	F	9890	F
5NBGP0039	Los Feliz off-ramp	Crystal Springs off-ramp	8570	F	8570	F	8600	F	8620	F	8600	F	8680	F	8700	F	8660	F	8750	F	8680	F	8710	F	8710	F
5NBGP0040	Crystal Springs off-ramp	Los Feliz on-ramp	8520	E	8520	E	8550	E	8570	E	8550	E	8630	E	8650	E	8600	E	8670	E	8600	E	8630	E	8630	E
5NBGP0041	Los Feliz on-ramp	Colorado off-ramp	7990	D	7990	D	8020	D	8040	D	8020	D	8100	D	8120	D	8070	D	8140	D	8080	D	8110	D	8110	D
5NBGP0042	Colorado off-ramp	Colorado on-ramp	7470	C	7470	C	7520	C	7530	C	7510	C	7600	C	7620	C	7560	C	7620	C	7570	C	7600	C	7600	C
5NBGP0043	Colorado on-ramp	SR 134 EB/Zoo off-ramp	8270	D	8270	D	8320	D	8340	D	8310	D	8390	D	8410	D	8350	D	8420	D	8370	D	8390	D	8390	D
5NBGP0044	SR 134 EB/Zoo off-ramp	SR 134 WB off-ramp	7470	D	7470	D	7530	C	7540	C	7510	C	7620	C	7640	C	7580	C	7660	C	7610	C	7620	C	7620	C
5NBGP0045	SR 134 WB off-ramp	SR 134 WB on-ramp	4510	B	4510	B	4550	B	4530	B	4520	B	4500	B	4520	B	4470	B	4420	B	4400	B	4440	B	4440	B
5NBGP0046	SR 134 WB on-ramp	Western off-ramp	7370	F	7370	F	7220	F	7210	F	7300	F	7400	F	7400	F	7340	F	7300	F	7310	F	7330	F	7330	F
5NBGP0047	Western off-ramp	Western on-ramp	6740	D	6740	D	6600	D	6590	D	6670	D	6760	D	6770	D	6720	D	6660	D	6670	D	6690	D	6690	D
5NBGP0048	Western on-ramp	North of Western on-ramp	7240	C	7240	C	7110	C	7110	C	7190	C	7280	C	7270	C	7220	C	7180	C	7190	C	7200	C	7200	C

NOTES:
 Volume is reported in **mean** vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-43

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Northbound I-5
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 5 - PM Peak Hour Analysis																												
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative															
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)					
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5NBGP0001	South of Eastern off-ramp	Eastern off-ramp	9510	E	9510	E	9530	E	9520	E	9510	E	9510	E	9540	E	9490	E	9570	E	9540	E	9570	E	9570	E	9570	E
5NBGP0002	Eastern off-ramp	I-710 off-ramp	9250	D	9250	D	9260	D	9260	D	9240	D	9250	D	9270	D	9230	D	9300	D	9270	D	9300	D	9300	D	9300	D
5NBGP0003	I-710 off-ramp	I-710 on-ramp	7920	E	7920	E	7900	E	7900	E	7910	E	7810	E	7750	E	7790	E	7660	D	7620	D	7650	D	7650	D	7650	D
5NBGP0004	I-710 on-ramp	Downey on-ramp	10,110	E	10,110	E	10,110	E	10,100	E	10,080	E	10000	E	9950	E	9980	E	9890	E	9850	E	9890	E	9890	E	9890	E
5NBGP0005	Downey on-ramp	Indiana off-ramp	10,310	E	10,310	E	10,310	E	10,310	E	10,300	E	10,240	E	10,190	E	10,230	E	10,150	E	10,100	E	10,170	E	10,170	E	10,170	E
5NBGP0006	Indiana off-ramp	Indiana on-ramp	9890	E	9890	E	9890	E	9880	E	9860	E	9810	E	9760	E	9800	E	9670	D	9620	D	9690	E	9690	E	9690	E
5NBGP0007	Indiana on-ramp	Calzona off-ramp	10,070	E	10,070	E	10,070	E	10,060	E	10,020	E	9980	E	9930	E	9970	E	9840	E	9790	E	9850	E	9850	E	9850	E
5NBGP0008	Calzona off-ramp	Calzona on-ramp	9970	E	9970	E	9970	E	9960	E	9920	E	9880	E	9830	E	9870	E	9740	E	9690	E	9750	E	9750	E	9750	E
5NBGP0009	Calzona on-ramp	Grand Vista off-ramp	10,060	E	10,060	E	10,060	E	10,060	E	10,020	E	9980	E	9930	E	9970	E	9850	E	9800	E	9860	E	9860	E	9860	E
5NBGP0010	Grand Vista off-ramp	US 101 NB off-ramp	9800	E	9800	E	9800	E	9800	E	9760	E	9720	E	9670	D	9710	E	9590	D	9540	D	9600	D	9600	D	9600	D
5NBGP0011	US 101 NB off-ramp	I-10 WB off-ramp	7920	E	7920	E	7910	E	7910	E	7910	E	7880	E	7830	E	7870	E	7810	E	7750	E	7810	E	7810	E	7810	E
5NBGP0012	I-10 WB off-ramp	Soto off-ramp	5590	F	5590	F	5610	F	5590	F	5590	F	5580	F	5530	F	5550	F	5550	F	5500	F	5550	F	5550	F	5550	F
5NBGP0013	Soto off-ramp	SR 60 WB on-ramp	5380	F	5380	F	5400	F	5380	F	5390	F	5370	F	5300	F	5330	F	5300	F	5250	F	5290	F	5290	F	5290	F
5NBGP0014	SR 60 WB on-ramp	Seventh off-ramp	6460	F	6460	F	6470	F	6490	F	6470	F	6380	F	6360	F	6370	F	6330	F	6230	F	6320	F	6320	F	6320	F
5NBGP0015	Seventh off-ramp	Seventh on-ramp	6230	F	6230	F	6240	F	6250	F	6230	F	6160	F	6140	F	6160	F	6100	F	6030	F	6110	F	6110	F	6110	F
5NBGP0016	Seventh on-ramp	I-10 EB on-ramp	6820	F	6820	F	6830	F	6850	F	6850	F	6780	F	6730	F	6760	F	6740	F	6620	F	6720	F	6720	F	6720	F
5NBGP0017	I-10 EB on-ramp	Fourth off-ramp	10,220	E	10,220	E	10,260	E	10,250	E	10,270	E	10,330	F	10,260	E	10,290	E	10,390	F	10,270	E	10,340	F	10,340	F	10,340	F
5NBGP0018	Fourth off-ramp	Fourth on-ramp	9990	E	9990	E	10,030	E	10,020	E	10,030	E	10,100	E	10,030	E	10,060	E	10,170	E	10,060	E	10,110	E	10,110	E	10,110	E
5NBGP0019	Fourth on-ramp	Cesar Chavez off-ramp	10,610	F	10,610	F	10,650	F	10,650	F	10,660	F	10,720	F	10,630	F	10,670	F	10,800	F	10,680	F	10,730	F	10,730	F	10,730	F
5NBGP0020	Cesar Chavez off-ramp	I-10 EB off-ramp	10,130	E	10,130	E	10,180	E	10,170	E	10,180	E	10,250	E	10,170	E	10,230	E	10,370	E	10,260	E	10,290	E	10,290	E	10,290	E
5NBGP0021	I-10 EB off-ramp	State on-ramp	8400	E	8400	E	8420	E	8390	E	8410	E	8450	E	8400	E	8460	E	8440	E	8340	E	8380	E	8380	E	8380	E
5NBGP0022	State on-ramp	I-10 WB on-ramp	8760	F	8760	F	8770	F	8770	F	8760	F	8810	F	8770	F	8820	F	8860	F	8780	F	8820	F	8820	F	8820	F
5NBGP0023	I-10 WB on-ramp	Marengo on-ramp	10,530	E	10,530	E	10,460	E	10,440	E	10,490	E	10,330	E	10,280	E	10,260	E	9810	E	9690	D	9850	E	9850	E	9850	E
5NBGP0024	Marengo on-ramp	Main Street off-ramp	11,090	F	11,090	F	11,040	F	11,000	F	11,060	F	10,950	F	10,900	F	10,890	F	10,450	F	10,310	E	10,480	F	10,480	F	10,480	F
5NBGP0025	Main Street off-ramp	Broadway off-ramp	10,720	E	10,720	E	10,670	E	10,630	E	10,700	E	10,550	E	10,510	E	10,490	E	10,060	E	9930	E	10,150	E	10,150	E	10,150	E
5NBGP0026	Broadway off-ramp	SR 110 NB off-ramp	10,010	F	10,010	F	9940	F	9940	F	9980	F	9900	F	9840	F	9860	F	9650	F	9530	F	9670	F	9670	F	9670	F
5NBGP0027	SR 110 NB off-ramp	Pasadena/Broadway on-ramp	8970	F	8970	F	8970	F	8970	F	8950	F	8850	F	8800	E	8840	F	8690	E	8560	E	8740	E	8740	E	8740	E
5NBGP0028	Pasadena/Broadway on-ramp	SR 110 SB on-ramp	9930	F	9930	F	9880	F	9890	F	9910	F	9850	F	9770	F	9820	F	9740	F	9600	F	9750	F	9750	F	9750	F
5NBGP0029	SR 110 SB on-ramp	Riverside/SR 110 NB on-ramp	10,210	F	10,210	F	10,170	F	10,180	F	10,190	F	10,150	F	10,070	F	10,120	F	10,050	F	9910	F	10,060	F	10,060	F	10,060	F
5NBGP0030	Riverside/SR 110 NB on-ramp	Stadium Way off-ramp	12,570	F	12,570	F	12,520	F	12,530	F	12,540	F	12,520	F	12,420	F	12,490	F	12,410	F	12,300	F	12,420	F	12,420	F	12,420	F
5NBGP0031	Stadium Way off-ramp	Stadium Way on-ramp	12,260	F	12,260	F	12,240	F	12,230	F	12,250	F	12,150	F	12,030	F	12,080	F	11,870	F	11,790	F	11,910	F	11,910	F	11,910	F
5NBGP0032	Stadium Way on-ramp	SR 2 NB off-ramp	12,770	F	12,770	F	12,740	F	12,760	F	12,770	F	12,630	F	12,550	F	12,570	F	12,380	F	12,250	F	12,400	F	12,400	F	12,400	F
5NBGP0033	SR 2 NB off-ramp	SR 2 SB off-ramp	8320	F	8320	F	8300	F	8290	F	8300	F	8340	F	8310	F	8310	F	8290	F	8220	E	8300	F	8300	F	8300	F
5NBGP0034	SR 2 SB off-ramp	SR 2 on-ramp	8350	E	8350	E	8330	E	8330	E	8330	E	8380	E	8340	E	8340	E	8320	E	8250	E	8330	E	8330	E	8330	E
5NBGP0035	SR 2 on-ramp	Fletcher on-ramp	9000	D	9000	D	8980	D	8980	D	9010	D	9020	D	8980	D	8960	D	8920	D	8860	D	8950	D	8950	D	8950	D
5NBGP0036	Fletcher on-ramp	Glendale off-ramp	9420	F	9420	F	9390	F	9390	E	9420	E	9430	E	9390	E	9370	E	9340	E	9280	E	9360	E	9360	E	9360	E
5NBGP0037	Glendale off-ramp	Glendale on-ramp	8560	E	8560	E	8570	E	8560	E	8540	E	8540	E	8540	E	8500	E	8480	E	8410	E	8500	E	8500	E	8500	E
5NBGP0038	Glendale on-ramp	Los Feliz off-ramp	8800	F	8800	F	8800	D	8800	D	8780	D	8790	D	8780	D	8750	D	8740	D	8670	D	8750	D	8750	D	8750	D
5NBGP0039	Los Feliz off-ramp	Crystal Springs off-ramp	7980	E	7980	E	7970	E	7970	E	7950	E	7970	E	7950	E	7920	E	7910	E	7840	E	7920	E	7920	E	7920	E
5NBGP0040	Crystal Springs off-ramp	Los Feliz on-ramp	7910	E	7910	E	7910	E	7900	E	7890	E	7900	E	7880	E	7850	E	7830	E	7760	E	7850	E	7850	E	7850	E
5NBGP0041	Los Feliz on-ramp	Colorado off-ramp	7700	D	7700	D	7700	D	7700	D	7690	D	7680	D	7670	D	7630	D	7610	D	7540	D	7630	D	7630	D	7630	D
5NBGP0042	Colorado off-ramp	Colorado on-ramp	6990	C	6990	C	6980	C	6990	C	6970	C	6970	C	6950	C	6910	C	6890	C	6830	C	6910	C	6910	C	6910	C
5NBGP0043	Colorado on-ramp	SR 134 EB/Zoo off-ramp	8410	F	8410	F	8400	F	8400	F	8390	F	8390	F	8360	F	8340	F	8310	F	8250	F	8330	D	8330	D	8330	D
5NBGP0044	SR 134 EB/Zoo off-ramp	SR 134 WB off-ramp	7390	D	7390	D	7380	C	7380	C	7380	C	7370	C	7340	C	7340	C	7340	C	7270	C	7340	C	7340	C	7340	C
5NBGP0045	SR 134 WB off-ramp	SR 134 WB on-ramp	5210	C	5210	C	5210	C	5200	C	5180	C	5110	C	5070	C	5060	C	5020	C	4960	C	5020	C	5020	C	5020	C
5NBGP0046	SR 134 WB on-ramp	Western off-ramp	8510	F	8510	F	8500	F	8490	F	8500	F	8570	F	8500	F	8460	F	8450	F	8470	F	8470	F	8470	F	8470	F
5NBGP0047	Western off-ramp	Western on-ramp	7910	E	7910	E	8000	E	7990	E	8010	E	7910	E	7910	E	7970	E	7950	E	7880	E	7910	E	7910	E	7910	E
5NBGP0048	Western on-ramp	North of Western on-ramp	9100	D	9100	D	9070	D	9080	D	9100	D	9170	D	9150	D	9070	D	9150	D	9150	D	9120	D	9120	D	9120	D

NOTES:
 Volume is reported in **mean** vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-44

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Southbound I-5
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 5 - AM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5SBGP0001	North of Western off-ramp	Western off-ramp	9330	D	9330	D	9260	D	9190	D	9260	D	9440	D	9420	D	9370	D	9340	D	9220	D	9230	D
5SBGP0002	Western off-ramp	Western on-ramp	8500	E	8500	E	8390	E	8320	E	8410	E	8620	E	8610	E	8520	E	8390	E	8360	E	8370	E
5SBGP0003	Western on-ramp	SR 134 EB off-ramp	9470	F	9470	F	9340	F	9270	F	9370	F	9610	F	9590	F	9500	F	9470	F	9340	F	9360	F
5SBGP0004	SR 134 EB off-ramp	SR 134 EB on-ramp	6850	D	6850	D	6930	D	6870	D	6860	D	6930	D	6930	D	6850	D	6720	D	6640	D	6760	D
5SBGP0005	SR 134 EB on-ramp	SR 134 WB/Fairmont on-ramp	9150	C	9150	C	9220	C	9190	C	9210	C	9320	C	9310	C	9180	C	9250	C	9120	C	9250	C
5SBGP0006	SR 134 WB/Fairmont on-ramp	Zoo on-ramp	9870	D	9870	D	9940	D	9900	D	9930	D	10,020	D	10,010	D	9880	D	9950	D	9810	D	9950	D
5SBGP0007	Zoo on-ramp	Colorado off-ramp	9940	E	9940	E	10000	F	9960	E	10000	F	10,090	F	10,080	F	9950	E	10,010	F	9870	E	10,010	F
5SBGP0008	Colorado off-ramp	Colorado on-ramp	9100	D	9100	D	9160	D	9120	D	9150	D	9250	D	9240	D	9110	D	9170	D	9020	D	9160	D
5SBGP0009	Colorado on-ramp	Los Feliz off-ramp	9590	D	9590	D	9670	E	9600	E	9630	E	9720	E	9730	E	9610	E	9650	E	9510	D	9650	E
5SBGP0010	Los Feliz off-ramp	Crystal Springs/Los Feliz on-ramp	8210	E	8210	E	8270	E	8230	E	8250	E	8350	E	8340	E	8250	E	8280	E	8150	E	8280	E
5SBGP0011	Crystal Springs/Los Feliz on-ramp	Glendale off-ramp	8420	D	8420	D	8540	D	8440	D	8470	D	8540	D	8570	D	8470	D	8500	D	8370	D	8490	D
5SBGP0012	Glendale off-ramp	Glendale on-ramp	8210	D	8210	D	8370	D	8230	D	8270	D	8330	D	8390	D	8260	D	8290	D	8160	D	8280	D
5SBGP0013	Glendale on-ramp	Fletcher off-ramp	8720	D	8720	D	8920	D	8750	D	8790	D	8850	D	8910	D	8750	D	8790	D	8660	D	8780	D
5SBGP0014	Fletcher off-ramp	SR 2 off-ramp	8360	D	8360	D	8450	D	8420	D	8450	D	8540	D	8550	D	8420	D	8540	D	8360	D	8490	D
5SBGP0015	SR 2 off-ramp	Stadium Way off-ramp	7640	D	7640	D	7680	E	7630	D	7740	E	7730	E	7810	E	7700	E	7680	E	7530	F	7650	D
5SBGP0016	Stadium Way off-ramp	SR 2 on-ramp	6460	E	6460	E	6490	E	6500	E	6230	E	6490	E	6500	E	6580	F	6410	E	6390	E	6490	E
5SBGP0017	SR 2 on-ramp	Stadium Way on-ramp	10,280	E	10,280	E	10,220	E	10,190	E	10,320	E	10,290	E	10,280	E	10,180	E	10,110	E	9990	E	10,090	E
5SBGP0018	Stadium Way on-ramp	Riverside/SR 110 SB off-ramp	10,460	F	10,460	F	10,350	F	10,440	F	10,610	F	10,480	F	10,480	F	10,370	F	10,410	F	10,240	E	10,320	F
5SBGP0019	Riverside/SR 110 SB off-ramp	Riverside on-ramp	8060	E	8060	E	7910	E	7930	E	8180	E	8090	E	8040	E	7970	E	7910	E	7750	E	7880	E
5SBGP0020	Riverside on-ramp	Avenue 21/SR 110 NB off-ramp	8390	D	8390	D	8200	D	8200	D	8490	D	8390	D	8380	D	8260	D	8210	D	8080	D	8170	D
5SBGP0021	Avenue 21/SR 110 NB off-ramp	Avenue 21/SR 110 SB on-ramp	8120	F	8120	F	7940	F	8000	F	8090	F	8020	F	7900	F	7890	F	7980	F	7920	F	8030	F
5SBGP0022	Avenue 21/SR 110 SB on-ramp	Main off-ramp	8830	F	8830	F	8800	F	8780	F	8720	F	8770	F	8710	F	8760	F	8510	F	8480	F	8590	F
5SBGP0023	Main off-ramp	Broadway on-ramp	8640	E	8640	E	8680	E	8620	E	8530	E	8500	E	8440	E	8540	E	8230	E	8190	E	8350	E
5SBGP0024	Broadway on-ramp	Mission off-ramp	9990	F	9990	F	9930	F	9860	F	9900	F	9890	F	9820	F	9820	F	9560	F	9460	F	9600	F
5SBGP0025	Mission off-ramp	I-10 EB off-ramp	9580	F	9580	F	9530	F	9460	F	9520	F	9410	F	9380	F	9310	F	8980	F	8900	F	9010	F
5SBGP0026	I-10 EB off-ramp	Mission on-ramp	7690	E	7690	E	7610	D	7390	D	7590	D	7660	D	7620	D	7640	D	7530	D	7570	D	7620	D
5SBGP0027	Mission on-ramp	I-10 WB on-ramp	7970	E	7970	E	7870	E	7730	E	7880	E	7960	E	7940	E	7870	E	7850	E	7830	E	7880	E
5SBGP0028	I-10 WB on-ramp	Cesar Chavez on-ramp	10,070	E	10,070	E	10,110	E	10,010	E	10,090	E	10,210	E	10,100	E	10,100	E	10,270	E	10,200	E	10,300	E
5SBGP0029	Cesar Chavez on-ramp	Fourth off-ramp	10,440	F	10,440	F	10,470	F	10,400	F	10,470	F	10,550	F	10,440	F	10,470	F	10,630	F	10,520	F	10,630	F
5SBGP0030	Fourth off-ramp	Fourth on-ramp	9860	E	9860	E	9840	E	9800	E	9880	E	9950	E	9850	E	9890	E	10,020	E	9880	E	10,010	E
5SBGP0031	Fourth on-ramp	I-10 WB off-ramp	10,120	E	10,120	E	10,100	E	10,080	E	10,150	E	10,210	E	10,120	E	10,140	E	10,260	E	10,150	E	10,270	E
5SBGP0032	I-10 WB off-ramp	SR 60 EB off-ramp	7120	F	7120	F	7000	F	6970	F	7030	F	7020	F	7050	F	6950	F	6930	F	6840	F	6990	F
5SBGP0033	SR 60 EB off-ramp	Soto off-ramp	4310	F	4310	F	4380	F	4190	F	4200	F	4370	F	4330	F	4280	F	4210	F	4040	E	4230	F
5SBGP0034	Soto off-ramp	Seventh on-ramp	3860	E	3860	E	3930	E	3780	D	3760	D	3930	E	3880	E	3820	D	3750	D	3630	D	3760	D
5SBGP0035	Seventh on-ramp	Eight on-ramp	4020	F	4020	F	4060	F	3940	F	3930	F	4060	F	4020	F	3960	F	3920	F	3800	F	3910	F
5SBGP0036	Eight on-ramp	SR 60 EB on-ramp	4200	F	4200	F	4230	F	4140	F	4110	F	4220	F	4190	F	4150	F	4090	F	3980	F	4080	F
5SBGP0037	SR 60 EB on-ramp	US 101 SB on-ramp	5880	E	5880	E	5840	E	5750	D	5800	E	5890	E	5850	E	5830	E	5770	E	5660	D	5750	D
5SBGP0038	US 101 SB on-ramp	Lorena on-ramp	8710	D	8710	D	8610	D	8520	D	8660	D	8720	D	8680	D	8640	D	8490	D	8440	D	8520	D
5SBGP0039	Lorena on-ramp	Indiana off-ramp	8830	D	8830	D	8730	D	8630	D	8770	D	8840	D	8790	D	8750	D	8600	D	8550	D	8630	D
5SBGP0040	Indiana off-ramp	Indiana on-ramp	8570	D	8570	D	8470	D	8380	D	8530	D	8630	D	8590	D	8540	D	8400	D	8340	D	8430	D
5SBGP0041	Indiana on-ramp	Ditman off-ramp	8810	D	8810	D	8710	D	8630	D	8770	D	8850	D	8810	D	8780	D	8670	D	8610	D	8680	D
5SBGP0042	Ditman off-ramp	Ditman on-ramp	8720	D	8720	D	8670	D	8570	D	8610	D	8790	D	8710	D	8680	D	8580	D	8530	D	8600	D
5SBGP0043	Ditman on-ramp	Olympic off-ramp	8840	D	8840	D	8800	D	8720	D	8750	D	8910	D	8830	D	8820	D	8740	D	8670	D	8740	D
5SBGP0044	Olympic off-ramp	I-710 SB off-ramp	8670	D	8670	D	8630	D	8540	D	8580	D	8740	D	8670	D	8650	D	8580	D	8510	D	8580	D
5SBGP0045	I-710 SB off-ramp	I-710 SB on-ramp	6800	F	6800	F	6860	F	6760	F	6730	F	6820	F	6780	F	6770	F	6700	F	6690	F	6720	F
5SBGP0046	I-710 SB on-ramp	South of I-710 SB on-ramp	8500	E	8500	E	8580	E	8540	E	8440	E	8540	E	8530	E	8480	E	8510	E	8520	E	8520	E

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-45

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Southbound I-5
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 5 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5SBGP0001	North of Western off-ramp	Western off-ramp	9270	D	9270	D	9250	D	9270	D	9230	D	9290	D	9270	D	9290	D	9180	D	9090	D	9200	D
5SBGP0002	Western off-ramp	Western on-ramp	8470	E	8470	E	8450	E	8460	E	8430	E	8500	E	8480	E	8490	E	8330	E	8250	E	8360	E
5SBGP0003	Western on-ramp	SR 134 EB off-ramp	9360	F	9360	F	9330	F	9360	F	9380	F	9430	F	9390	F	9410	F	9240	F	9150	F	9260	F
5SBGP0004	SR 134 EB off-ramp	SR 134 EB on-ramp	5990	C	5990	C	6040	C	6030	C	6000	C	5850	C	5830	C	5850	C	5700	C	5600	C	5700	C
5SBGP0005	SR 134 EB on-ramp	SR 134 WB/Fairmont on-ramp	8730	C	8730	C	8780	C	8750	C	8750	C	8710	C	8710	C	8710	C	8760	C	8670	C	8720	C
5SBGP0006	SR 134 WB/Fairmont on-ramp	Zoo on-ramp	9360	D	9360	D	9400	D	9360	D	9360	D	9330	D	9330	D	9330	D	9350	D	9260	D	9330	D
5SBGP0007	Zoo on-ramp	Colorado off-ramp	9540	E	9540	E	9560	E	9530	E	9510	E	9520	E	9520	E	9510	E	9510	E	9420	E	9500	E
5SBGP0008	Colorado off-ramp	Colorado on-ramp	8290	D	8290	D	8300	D	8280	D	8250	D	8260	D	8260	D	8240	D	8260	D	8180	D	8250	D
5SBGP0009	Colorado on-ramp	Los Feliz off-ramp	9020	D	9020	D	9030	D	9010	D	8990	D	8990	D	8990	D	8970	D	9000	D	8920	D	8980	D
5SBGP0010	Los Feliz off-ramp	Crystal Springs/Los Feliz on-ramp	6950	D	6950	D	6980	D	6970	D	7130	D	7140	D	7110	D	7130	D	7170	D	7070	D	7140	D
5SBGP0011	Crystal Springs/Los Feliz on-ramp	Glendale off-ramp	7550	D	7550	D	7540	D	7520	D	7500	D	7520	D	7530	D	7500	D	7550	D	7450	D	7540	D
5SBGP0012	Glendale off-ramp	Glendale on-ramp	7190	C	7190	C	7190	C	7170	C	7160	C	7190	C	7160	C	7160	C	7210	C	7120	C	7210	C
5SBGP0013	Glendale on-ramp	Fletcher off-ramp	8130	D	8130	D	8130	D	8120	D	8090	D	8120	D	8090	D	8090	D	8130	D	8060	D	8140	D
5SBGP0014	Fletcher off-ramp	SR 2 off-ramp	7760	C	7760	C	7770	C	7750	C	7710	C	7780	C	7750	C	7780	C	7870	C	7770	C	7870	C
5SBGP0015	SR 2 off-ramp	Stadium Way off-ramp	7140	D	7140	D	7160	D	7100	D	7130	D	7160	D	7110	D	7170	D	7230	D	7100	E	7230	D
5SBGP0016	Stadium Way off-ramp	SR 2 on-ramp	6210	E	6210	E	6130	E	6280	E	6100	E	6280	E	6100	E	6200	E	6230	E	6230	E	6060	E
5SBGP0017	SR 2 on-ramp	Stadium Way on-ramp	9580	D	9580	D	9620	D	9570	D	9630	D	9500	D	9480	D	9510	D	9450	D	9310	D	9430	D
5SBGP0018	Stadium Way on-ramp	Riverside/SR 110 SB off-ramp	9760	F	9760	F	9780	F	9720	E	9780	F	9650	E	9650	E	9670	E	9620	D	9470	D	9590	E
5SBGP0019	Riverside/SR 110 SB off-ramp	Riverside on-ramp	7630	D	7630	D	7760	E	7640	D	7710	D	7600	D	7590	D	7590	D	7530	D	7420	D	7480	D
5SBGP0020	Riverside on-ramp	Avenue 21/SR 110 NB off-ramp	7740	D	7740	D	7850	D	7700	D	7820	D	7670	D	7650	D	7630	D	7560	D	7470	D	7520	D
5SBGP0021	Avenue 21/SR 110 NB off-ramp	Avenue 21/SR 110 SB on-ramp	7480	F	7480	F	7460	F	7500	F	7440	F	7310	F	7310	F	7300	F	7300	F	7210	F	7330	F
5SBGP0022	Avenue 21/SR 110 SB on-ramp	Main off-ramp	7850	E	7850	E	7800	E	7820	E	7830	E	7740	E	7700	E	7770	E	7630	E	7450	E	7580	E
5SBGP0023	Main off-ramp	Broadway on-ramp	7700	D	7700	D	7570	D	7630	D	7660	D	7470	D	7450	D	7540	D	7360	D	7180	D	7320	D
5SBGP0024	Broadway on-ramp	Mission off-ramp	8180	E	8180	E	8080	E	8080	E	8140	E	7910	E	7900	E	7930	E	7710	D	7570	D	7690	D
5SBGP0025	Mission off-ramp	I-10 EB off-ramp	7860	E	7860	E	7770	E	7760	E	7810	E	7580	D	7560	D	7590	D	7280	D	7140	D	7270	D
5SBGP0026	I-10 EB off-ramp	Mission on-ramp	6120	C	6120	C	6080	C	6060	C	6070	C	5890	C	5870	C	5880	C	5870	C	5770	C	5850	C
5SBGP0027	Mission on-ramp	I-10 WB on-ramp	6350	C	6350	C	6310	C	6280	C	6270	C	6140	C	6090	C	6130	C	6110	C	6000	C	6070	C
5SBGP0028	I-10 WB on-ramp	Cesar Chavez on-ramp	9200	D	9200	D	9170	D	9140	D	9160	D	9170	D	9100	D	9170	D	9220	D	9090	D	9180	D
5SBGP0029	Cesar Chavez on-ramp	Fourth off-ramp	9550	D	9550	D	9510	D	9480	D	9500	D	9510	D	9430	D	9510	D	9570	D	9440	D	9540	D
5SBGP0030	Fourth off-ramp	Fourth on-ramp	9230	D	9230	D	9220	D	9220	D	9220	D	9260	D	9160	D	9260	D	9300	D	9190	D	9270	D
5SBGP0031	Fourth on-ramp	I-10 WB off-ramp	9510	D	9510	D	9470	D	9480	D	9490	D	9530	D	9440	D	9540	D	9590	D	9450	D	9520	D
5SBGP0032	I-10 WB off-ramp	SR 60 EB off-ramp	7860	F	7860	F	7840	F	7850	F	7810	F	7730	F	7660	F	7700	F	7710	F	7580	F	7650	F
5SBGP0033	SR 60 EB off-ramp	Soto off-ramp	5940	F	5940	F	5950	F	5960	F	5960	F	6000	F	5950	F	5980	F	5960	F	5980	F	5980	F
5SBGP0034	Soto off-ramp	Seventh on-ramp	5660	F	5660	F	5660	F	5650	F	5640	F	5690	F	5680	F	5670	F	5670	F	5670	F	5660	F
5SBGP0035	Seventh on-ramp	Eight on-ramp	5810	F	5810	F	5820	F	5790	F	5810	F	5820	F	5820	F	5810	F	5810	F	5830	F	5820	F
5SBGP0036	Eight on-ramp	SR 60 EB on-ramp	5960	F	5960	F	5980	F	5960	F	5960	F	5980	F	5970	F	5990	F	5960	F	5980	F	5970	F
5SBGP0037	SR 60 EB on-ramp	US 101 SB on-ramp	8040	F	8040	F	7970	F	8040	F	8090	F	8070	F	8050	F	8040	F	8040	F	8010	F	8030	F
5SBGP0038	US 101 SB on-ramp	Lorena on-ramp	11,480	F	11,480	F	11,380	F	11,430	F	11,530	F	11,480	F	11,450	F	11,420	F	11,380	F	11,390	F	11,420	F
5SBGP0039	Lorena on-ramp	Indiana off-ramp	11,550	F	11,550	F	11,480	F	11,500	F	11,610	F	11,580	F	11,540	F	11,470	F	11,460	F	11,420	F	11,500	F
5SBGP0040	Indiana off-ramp	Indiana on-ramp	11,390	F	11,390	F	11,350	F	11,390	F	11,410	F	11,390	F	11,320	F	11,340	F	11,250	F	11,280	F	11,290	F
5SBGP0041	Indiana on-ramp	Ditman off-ramp	11,660	F	11,660	F	11,620	F	11,680	F	11,680	F	11,640	F	11,580	F	11,600	F	11,520	F	11,580	F	11,550	F
5SBGP0042	Ditman off-ramp	Ditman on-ramp	11,600	F	11,600	F	11,550	F	11,580	F	11,590	F	11,580	F	11,550	F	11,560	F	11,500	F	11,550	F	11,520	F
5SBGP0043	Ditman on-ramp	Olympic off-ramp	11,730	F	11,730	F	11,700	F	11,710	F	11,730	F	11,740	F	11,720	F	11,730	F	11,710	F	11,730	F	11,720	F
5SBGP0044	Olympic off-ramp	I-710 SB off-ramp	11,630	F	11,630	F	11,600	F	11,610	F	11,630	F	11,640	F	11,620	F	11,630	F	11,600	F	11,630	F	11,620	F
5SBGP0045	I-710 SB off-ramp	I-710 SB on-ramp	9100	F	9100	F	9100	F	9060	F	9120	F	9100	F	9050	F	9110	F	9090	F	9080	F	9110	F
5SBGP0046	I-710 SB on-ramp	South of I-710 SB on-ramp	11,280	F	11,280	F	11,310	F	11,290	F	11,300	F	11,320	F	11,300	F	11,330	F	11,350	F	11,330	F	11,340	F

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-46

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound I-10
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 10 - AM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
10EBGP0001	East of SB I-5 on-ramp	SB I-5 on-ramp	1600	A	1630	A	1600	A	1620	A	1580	A	1640	A	1630	A	1660	A	1820	A	1780	A	1750	A		
10EBGP0002	SB I-5 on-ramp	EB I-10/NB I-5 on-ramp	3650	B	3680	B	3580	B	3720	B	3580	B	3490	B	3470	B	3460	B	3230	B	3100	B	3160	B		
10EBGP0003	EB I-10/NB I-5 on-ramp	Soto/Marengo on-ramp	6030	B	6090	B	5990	B	6050	B	6060	B	5930	B	5970	B	5890	B	5750	B	5650	B	5690	B		
10EBGP0004	Soto/Marengo on-ramp	City Terrace off-ramp	6980	C	7060	C	6900	C	6960	C	7020	C	6900	C	6930	C	6860	C	6700	C	6600	C	6650	C		
10EBGP0005	City Terrace off-ramp	Eastern off-ramp	6580	C	6660	C	6480	C	6560	C	6610	C	6460	C	6490	C	6430	D	6240	C	6150	C	6210	C		
10EBGP0006	Eastern off-ramp	I-710 off-ramp	5980	B	6070	B	5860	B	5920	B	6000	B	5850	B	5890	B	5810	B	5480	B	5430	B	5500	B		
10EBGP0007	I-710 off-ramp	Eastern on-ramp	4220	B	4270	B	4170	B	4170	B	4200	B	4450	B	4450	B	4430	B	4310	B	4280	B	4390	B		
10EBGP0008	Eastern on-ramp	I-710 on-ramp	4630	C	4680	C	4600	C	4600	C	4610	C	4870	C	4860	C	4850	C	4670	C	4650	C	4760	C		
10EBGP0009	I-710 on-ramp	Fremont off-ramp	6100	D	6150	D	5870	D	5890	D	6050	D	6020	D	6050	D	5990	D	6190	D	6180	D	6140	D		
10EBGP0010	Fremont off-ramp	Fremont on-ramp	5520	C	5570	C	5330	C	5340	C	5500	C	5340	C	5340	C	5340	C	5470	C	5460	C	5430	C		
10EBGP0011	Fremont on-ramp	Atlantic off-ramp	6130	D	6170	D	5970	D	5980	D	6150	D	6090	D	6080	D	6070	D	6210	D	6210	D	6180	D		
10EBGP0012	Atlantic off-ramp	Atlantic on-ramp	5450	C	5500	C	5360	C	5370	C	5500	C	5420	C	5410	C	5390	C	5560	C	5530	C	5500	C		
10EBGP0013	Atlantic on-ramp	Garfield off-ramp	6010	D	6070	D	5930	C	5950	C	6110	D	6020	D	6010	D	6000	D	6150	D	6120	D	6090	D		
10EBGP0014	Garfield off-ramp	Garfield on-ramp	5510	C	5570	C	5470	C	5490	C	5600	C	5510	C	5500	C	5480	C	5600	C	5620	C	5560	C		
10EBGP0015	Garfield on-ramp	New off-ramp	6280	C	6340	C	6310	C	6320	C	6440	D	6330	C	6330	C	6320	C	6440	D	6460	D	6410	C		
10EBGP0016	New off-ramp	New on-ramp	5940	C	6000	C	6020	C	6040	C	6080	C	6090	C	6090	C	6070	C	6200	C	6220	C	6170	C		
10EBGP0017	New on-ramp	Del Mar off-ramp	6610	D	6680	D	6640	D	6650	D	6680	D	6690	D	6680	D	6660	D	6790	D	6810	D	6760	D		
10EBGP0018	Del Mar off-ramp	Del Mar on-ramp	6330	C	6410	C	6280	C	6280	C	6330	C	6340	C	6330	C	6320	C	6410	C	6430	D	6380	C		
10EBGP0019	Del Mar on-ramp	San Gabriel off-ramp	6790	D	6870	D	6730	D	6730	D	6780	D	6790	D	6780	D	6770	D	6860	D	6880	D	6830	D		
10EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	6410	C	6510	D	6410	C	6420	C	6520	D	6500	D	6510	D	6500	D	6550	D	6570	D	6530	D		
10EBGP0021	San Gabriel on-ramp	Walnut Grove off-ramp	6760	D	6850	D	6730	D	6720	D	6840	D	6820	D	6830	D	6810	D	6860	D	6890	D	6850	D		
10EBGP0022	Walnut Grove off-ramp	Walnut Grove on-ramp	6610	D	6710	D	6650	D	6640	D	6740	D	6750	D	6750	D	6730	D	6780	D	6820	D	6780	D		
10EBGP0023	Walnut Grove on-ramp	Rosemead off-ramp	6840	D	6940	D	6870	D	6880	D	6970	D	6990	D	7000	D	6970	D	7040	D	7070	D	7030	D		
10EBGP0024	Rosemead off-ramp	Rosemead on-ramp	5870	C	5970	C	5800	C	5810	C	5890	C	5900	C	5910	C	5890	C	5890	C	5920	C	5910	C		
10EBGP0025	Rosemead on-ramp	Baldwin off-ramp	6460	D	6560	D	6460	D	6480	D	6550	D	6570	D	6580	D	6560	D	6570	D	6600	D	6580	D		
10EBGP0026	Baldwin off-ramp	Baldwin on-ramp	5880	C	5970	C	5900	C	5910	C	5980	C	6040	C	6050	C	6030	C	6080	C	6110	C	6080	C		
10EBGP0027	Baldwin on-ramp	Santa Anita off-ramp	6680	C	6770	C	6650	C	6670	C	6740	C	6780	C	6790	C	6770	C	6820	C	6850	C	6820	C		
10EBGP0028	Santa Anita off-ramp	Santa Anita on-ramp	6080	C	6170	C	6070	C	6100	C	6190	C	6240	C	6250	C	6230	C	6280	C	6310	C	6270	C		
10EBGP0029	Santa Anita on-ramp	SB Peck off-ramp	6600	C	6690	C	6580	C	6610	C	6710	C	6760	C	6770	C	6750	C	6790	C	6820	C	6790	C		
10EBGP0030	SB Peck off-ramp	NB Peck off-ramp	6400	C	6500	C	6380	C	6400	C	6530	C	6580	C	6580	C	6550	C	6600	C	6630	C	6590	C		
10EBGP0031	NB Peck off-ramp	Peck/Valley on-ramp	6040	C	6140	C	6010	C	6040	C	6150	C	6220	C	6230	C	6200	C	6290	C	6320	C	6280	C		
10EBGP0032	Peck/Valley on-ramp	N Peck on-ramp	6350	C	6450	D	6350	C	6360	C	6470	D	6540	D	6550	D	6520	D	6610	D	6650	D	6610	D		
10EBGP0033	N Peck on-ramp	Garvey/Durfee on-ramp	6620	D	6730	D	6610	D	6630	D	6740	D	6810	D	6820	D	6800	D	6880	D	6910	D	6880	D		
10EBGP0034	Garvey/Durfee on-ramp	SB I-605 off-ramp	7140	C	7250	C	7120	C	7140	C	7260	C	7330	C	7340	C	7310	C	7400	D	7430	D	7390	D		
10EBGP0035	SB I-605 off-ramp	NB I-605 off-ramp	6370	D	6520	E	6300	D	6320	D	6480	E	6530	E	6540	E	6520	E	6580	E	6600	E	6570	E		
10EBGP0036	NB I-605 off-ramp	I-605 on-ramp	5160	C	5310	C	5070	C	5100	C	5270	C	5310	C	5310	C	5290	C	5350	C	5370	C	5350	C		
10EBGP0037	I-605 on-ramp	West of I-605 on-ramp	7600	C	7790	C	7490	C	7510	C	7760	C	7800	C	7770	C	7760	C	7770	C	7830	C	7790	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-47

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound I-10
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 10 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
Segment ID	From	To											Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
10EBGP0001	East of SB I-5 on-ramp	SB I-5 on-ramp	1330	A	1300	A	1370	A	1380	A	1260	A	1270	A	1330	A	1300	A	1470	A	1480	A	1460	A
10EBGP0002	SB I-5 on-ramp	EB I-10/NB I-5 on-ramp	4890	C	4870	C	4870	C	4880	C	4850	C	4660	B	4730	C	4730	C	4470	B	4470	B	4520	B
10EBGP0003	EB I-10/NB I-5 on-ramp	Soto/Marengo on-ramp	8930	C	8940	C	8940	C	8950	C	8950	C	8810	C	8850	C	8850	C	8820	C	8820	C	8840	C
10EBGP0004	Soto/Marengo on-ramp	City Terrace off-ramp	10,010	E	10,030	E	10,020	E	10,030	E	10,040	E	9870	E	9920	E	9910	E	9820	E	9820	E	9840	E
10EBGP0005	City Terrace off-ramp	Eastern off-ramp	9540	E	9560	E	9550	E	9570	E	9570	E	9390	E	9430	E	9430	E	9320	E	9310	E	9330	E
10EBGP0006	Eastern off-ramp	I-710 off-ramp	8830	C	8860	C	8860	C	8860	C	8870	C	8650	C	8700	C	8690	C	8550	C	8550	C	8570	C
10EBGP0007	I-710 off-ramp	Eastern on-ramp	6540	D	6510	D	6650	D	6660	D	6550	D	6690	D	6700	D	6700	D	6640	D	6660	D	6690	D
10EBGP0008	Eastern on-ramp	I-710 on-ramp	7030	D	7010	D	7180	D	7200	D	7040	D	7230	D	7240	D	7230	D	7070	D	7090	D	7120	D
10EBGP0009	I-710 on-ramp	Fremont off-ramp	9640	F	9640	F	9460	F	9460	F	9630	F	9580	F	9600	F	9550	F	9570	F	9570	F	9560	F
10EBGP0010	Fremont off-ramp	Fremont on-ramp	8880	E	8890	E	8780	E	8790	E	8920	E	8860	E	8870	E	8860	E	8840	E	8860	E	8830	E
10EBGP0011	Fremont on-ramp	Atlantic off-ramp	9610	F	9630	F	9520	F	9520	F	9650	F	9610	F	9620	F	9600	F	9620	F	9650	F	9610	F
10EBGP0012	Atlantic off-ramp	Atlantic on-ramp	8780	E	8790	E	8750	E	8740	E	8760	E	8700	E	8710	E	8690	E	8690	E	8700	E	8690	E
10EBGP0013	Atlantic on-ramp	Garfield off-ramp	9770	F	9790	F	9750	F	9740	F	9770	F	9760	F	9770	F	9750	F	9770	F	9770	F	9760	F
10EBGP0014	Garfield off-ramp	Garfield on-ramp	8950	F	8970	F	8930	E	8920	E	8950	F	8900	E	8900	E	8900	E	8880	E	8880	E	8880	E
10EBGP0015	Garfield on-ramp	New off-ramp	10,110	F	10,120	F	10,100	F	10,090	F	10,100	F	10,070	F	10,080	F	10,080	F	10,070	F	10,080	F	10,070	F
10EBGP0016	New off-ramp	New on-ramp	9490	F	9500	F	9530	F	9540	F	9510	F	9510	F	9510	F	9510	F	9540	F	9540	F	9540	F
10EBGP0017	New on-ramp	Del Mar off-ramp	10,190	F	10,180	F	10,130	F	10,140	F	10,130	F	10,080	F	10,080	F	10,070	F	10,080	F	10,080	F	10,080	F
10EBGP0018	Del Mar off-ramp	Del Mar on-ramp	9680	F	9690	F	9710	F	9710	F	9720	F	9680	F	9690	F	9680	F	9690	F	9700	F	9680	F
10EBGP0019	Del Mar on-ramp	San Gabriel off-ramp	10,260	F	10,260	F	10,270	F	10,270	F	10,280	F	10,240	F	10,250	F	10,240	F	10,240	F	10,250	F	10,240	F
10EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	9510	F	9530	F	9550	F	9550	F	9560	F	9560	F	9560	F	9560	F	9580	F	9580	F	9590	F
10EBGP0021	San Gabriel on-ramp	Walnut Grove off-ramp	9960	F	9980	F	10000	F	10000	F	10000	F	10000	F	10000	F	10000	F	10,020	F	10,020	F	10,020	F
10EBGP0022	Walnut Grove off-ramp	Walnut Grove on-ramp	9670	F	9700	F	9780	F	9780	F	9810	F	9810	F	9820	F	9810	F	9850	F	9850	F	9860	F
10EBGP0023	Walnut Grove on-ramp	Rosemead off-ramp	9950	F	10000	F	10,060	F	10,060	F	10,110	F	10,110	F	10,130	F	10,120	F	10,160	F	10,160	F	10,170	F
10EBGP0024	Rosemead off-ramp	Rosemead on-ramp	8200	E	8250	E	8150	E	8150	E	8180	E	8160	E	8170	E	8160	E	8170	E	8170	E	8180	E
10EBGP0025	Rosemead on-ramp	Baldwin off-ramp	9180	F	9220	F	9190	F	9190	F	9220	F	9190	F	9210	F	9200	F	9210	F	9210	F	9220	F
10EBGP0026	Baldwin off-ramp	Baldwin on-ramp	8170	E	8210	E	8220	E	8220	E	8250	E	8250	E	8270	E	8260	E	8320	E	8310	E	8320	E
10EBGP0027	Baldwin on-ramp	Santa Anita off-ramp	9160	E	9210	E	9150	E	9150	E	9190	D	9180	E	9200	E	9190	E	9230	E	9220	E	9230	E
10EBGP0028	Santa Anita off-ramp	Santa Anita on-ramp	8050	E	8110	E	8050	E	8050	E	8090	E	8060	E	8100	E	8070	E	8140	E	8140	E	8140	E
10EBGP0029	Santa Anita on-ramp	SB Peck off-ramp	8750	D	8800	D	8750	D	8750	D	8790	D	8760	D	8800	D	8770	D	8830	D	8830	D	8830	D
10EBGP0030	SB Peck off-ramp	NB Peck off-ramp	8390	D	8440	D	8390	D	8390	D	8440	D	8400	D	8440	D	8400	D	8470	D	8470	D	8470	D
10EBGP0031	NB Peck off-ramp	Peck/Valley on-ramp	7750	D	7830	D	7740	D	7740	D	7840	D	7830	D	7870	E	7850	D	7920	E	7920	E	7920	E
10EBGP0032	Peck/Valley on-ramp	N Peck on-ramp	8080	E	8140	E	8080	E	8080	E	8170	E	8160	E	8200	E	8170	E	8250	E	8250	E	8250	E
10EBGP0033	N Peck on-ramp	Garvey/Durfee on-ramp	8370	F	8450	F	8440	E	8380	E	8470	F	8550	F	8530	F	8560	F	8580	F	8550	F	8590	F
10EBGP0034	Garvey/Durfee on-ramp	SB I-605 off-ramp	9110	E	9200	E	9180	E	9120	E	9210	D	9300	E	9280	E	9300	E	9320	E	9290	E	9330	E
10EBGP0035	SB I-605 off-ramp	NB I-605 off-ramp	7820	F	7950	E	7830	F	7850	F	7970	E	7910	E	7970	E	7930	E	7980	E	7970	E	8020	E
10EBGP0036	NB I-605 off-ramp	I-605 on-ramp	5930	C	6110	C	5930	C	5950	C	6120	C	6080	C	6130	C	6090	C	6140	C	6130	C	6180	C
10EBGP0037	I-605 on-ramp	West of I-605 on-ramp	9950	D	10,180	D	9960	D	9950	D	10,230	D	10,220	D	10,240	D	10,250	D	10,250	D	10,230	D	10,190	D

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-48

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound I-10
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 10 - AM Peak Hour Analysis

Segment ID	Freeway Segment		2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
10WBG0001	East of I-605 off-ramp	I-605 off-ramp	9190	C	9420	C	9020	C	9060	C	9390	C	9360	C	9350	C	9320	C	9330	C	9360	C	9350	C
10WBG0002	I-605 off-ramp	NB I-605 on-ramp	6200	C	6400	C	6090	C	6100	C	6330	C	6380	C	6300	C	6310	C	6330	C	6340	C	6350	C
10WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	7260	C	7410	C	7160	C	7180	C	7320	C	7430	C	7330	C	7320	C	7440	C	7430	C	7450	C
10WBG0004	SB I-605 on-ramp	Garvey/Durfee off-ramp	8760	F	8860	F	8660	F	8660	F	8800	F	8910	F	8810	F	8810	F	8900	F	8890	F	8920	F
10WBG0005	Garvey/Durfee off-ramp	NB Peck off-ramp	7890	E	7970	E	7870	E	7870	E	7980	E	8060	E	7980	E	8010	E	8050	E	8040	E	8060	E
10WBG0006	NB Peck off-ramp	Valley off-ramp	7590	D	7670	D	7560	D	7560	D	7680	D	7760	D	7680	D	7710	D	7750	D	7740	D	7760	D
10WBG0007	Valley off-ramp	Valley on-ramp	7440	C	7510	C	7410	C	7410	C	7530	C	7600	D	7520	C	7550	C	7590	C	7580	C	7590	C
10WBG0008	Valley on-ramp	SB Peck off-ramp	7710	D	7790	D	7680	D	7690	D	7820	D	7900	C	7830	D	7830	D	7900	D	7890	D	7900	D
10WBG0009	SB Peck off-ramp	Peck on-ramp	7570	C	7650	C	7530	C	7540	C	7680	C	7750	C	7690	C	7690	C	7760	C	7740	C	7760	C
10WBG0010	Peck on-ramp	Santa Anita off-ramp	7920	C	8000	C	7860	C	7870	C	8010	C	8070	D	8000	C	8010	C	8080	D	8060	D	8070	D
10WBG0011	Santa Anita off-ramp	Santa Anita on-ramp	7120	D	7190	D	7060	D	7070	D	7210	D	7270	D	7200	D	7210	D	7280	D	7260	D	7270	D
10WBG0012	Santa Anita on-ramp	Temple City off-ramp	8130	E	8190	E	8100	E	8120	E	8210	E	8260	E	8200	E	8200	E	8270	E	8260	E	8260	E
10WBG0013	Temple City off-ramp	Temple City on-ramp	7310	D	7370	D	7380	D	7400	D	7470	D	7550	D	7490	D	7490	D	7580	D	7570	D	7580	D
10WBG0014	Temple City on-ramp	Rosemead off-ramp	8310	E	8370	F	8350	F	8370	F	8450	F	8500	F	8450	E	8450	F	8520	F	8510	F	8520	F
10WBG0015	Rosemead off-ramp	Rosemead on-ramp	7510	D	7570	D	7380	D	7410	D	7470	D	7530	D	7480	D	7500	D	7550	D	7540	D	7560	D
10WBG0016	Rosemead on-ramp	Walnut Grove off-ramp	8690	F	8730	F	8650	F	8670	F	8710	F	8770	F	8720	F	8730	F	8780	F	8770	F	8790	F
10WBG0017	Walnut Grove off-ramp	Walnut Grove on-ramp	8360	E	8380	E	8330	E	8350	E	8360	E	8420	E	8370	E	8380	E	8430	E	8420	E	8440	E
10WBG0018	Walnut Grove on-ramp	San Gabriel off-ramp	8830	F	8840	F	8760	F	8760	F	8770	F	8810	F	8760	F	8770	F	8790	F	8800	F	8820	F
10WBG0019	San Gabriel off-ramp	San Gabriel on-ramp	8300	E	8330	E	8260	E	8260	E	8280	E	8320	E	8270	E	8270	E	8300	E	8290	E	8300	E
10WBG0020	San Gabriel on-ramp	Del Mar off-ramp	8940	F	8950	F	8780	F	8780	F	8820	F	8840	F	8790	F	8800	F	8810	F	8820	F	8840	F
10WBG0021	Del Mar off-ramp	NB Del Mar on-ramp	8280	E	8280	E	8130	E	8130	E	8160	E	8170	E	8110	E	8130	E	8140	E	8150	E	8170	E
10WBG0022	NB Del Mar on-ramp	SB Del Mar on-ramp	8480	F	8480	F	8380	F	8380	F	8370	F	8410	F	8370	F	8380	F	8420	F	8420	F	8430	F
10WBG0023	SB Del Mar on-ramp	New off-ramp	8780	D	8760	D	8790	D	8780	D	8770	D	8830	D	8770	D	8790	D	8820	D	8840	D	8850	D
10WBG0024	New off-ramp	New on-ramp	7990	E	7990	E	7990	E	7980	E	7990	E	8030	E	7980	E	7990	E	8030	E	8050	E	8060	E
10WBG0025	New on-ramp	Garfield off-ramp	8380	F	8380	F	8320	E	8330	E	8340	F	8360	F	8320	E	8320	E	8370	F	8390	F	8400	F
10WBG0026	Garfield off-ramp	Garfield on-ramp	7460	D	7450	D	7460	D	7460	D	7430	D	7390	D	7350	D	7360	D	7380	D	7400	D	7410	D
10WBG0027	Garfield on-ramp	Atlantic off-ramp	8430	F	8450	F	8430	F	8430	F	8490	F	8500	F	8460	F	8450	F	8510	F	8520	F	8530	F
10WBG0028	Atlantic off-ramp	Atlantic on-ramp	7540	D	7560	D	7470	D	7440	D	7500	D	7490	D	7430	D	7440	D	7510	D	7520	D	7520	D
10WBG0029	Atlantic on-ramp	Fremont off-ramp	8350	F	8370	F	8180	E	8160	E	8390	F	8320	E	8290	E	8260	E	8260	E	8280	E	8310	E
10WBG0030	Fremont off-ramp	Fremont on-ramp	7720	D	7740	D	7550	D	7580	D	7880	E	7770	D	7730	D	7670	D	7700	D	7720	D	7770	D
10WBG0031	Fremont on-ramp	I-710/Eastern off-ramp	8410	F	8420	F	8030	E	8020	E	8460	F	8440	F	8420	F	8410	F	8310	F	8320	F	8340	F
10WBG0032	I-710/Eastern off-ramp	Campus on-ramp	5310	D	5490	D	5140	D	5100	D	5430	D	5150	D	5350	D	5430	D	5200	D	5290	D	5100	D
10WBG0033	Campus on-ramp	I-710 on-ramp	6430	D	6610	D	6220	C	6180	C	6550	D	6250	D	6450	D	6520	D	6260	D	6360	D	6180	C
10WBG0034	I-710 on-ramp	Herbert on-ramp	8230	C	8410	C	8480	C	8470	C	8500	C	8280	C	8250	C	8180	C	8410	C	8380	C	8350	C
10WBG0035	Herbert on-ramp	Soto off-ramp	8920	E	9120	E	9150	E	9140	E	9190	E	8960	E	8930	E	8870	E	9080	E	9060	E	9030	E
10WBG0036	Soto off-ramp	WB I-10/SB I-5 off-ramp	8100	C	8290	C	8320	C	8310	C	8350	C	8160	C	8120	C	8050	C	8260	C	8240	C	8220	C
10WBG0037	WB I-10/SB I-5 off-ramp	NB I-5 off-ramp	5570	C	5740	C	5610	C	5570	C	5680	C	5550	C	5600	C	5480	C	5460	C	5480	C	5430	C
10WBG0038	NB I-5 off-ramp	West of NB I-5 off-ramp	3160	B	3310	B	3320	B	3250	B	3320	B	3450	B	3440	B	3390	B	3690	C	3670	C	3600	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-49

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound I-10
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 10 - PM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
10WBG0001	East of I-605 off-ramp	I-605 off-ramp	7290	C	7480	C	7300	C	7300	C	7500	C	7530	C	7530	C	7510	C	7530	C	7530	C	7540	C
10WBG0002	I-605 off-ramp	NB I-605 on-ramp	4420	B	4560	B	4470	B	4460	B	4600	B	4640	B	4660	B	4640	B	4660	B	4650	B	4680	B
10WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	5500	C	5630	C	5560	C	5560	C	5670	C	5730	C	5740	C	5720	C	5910	C	5890	C	5840	C
10WBG0004	SB I-605 on-ramp	Garvey/Durfee off-ramp	7010	F	7140	F	7080	F	7090	F	7180	F	7240	F	7250	F	7230	F	7410	F	7400	F	7350	F
10WBG0005	Garvey/Durfee off-ramp	NB Peck off-ramp	6180	C	6280	C	6260	C	6260	C	6330	D	6390	D	6410	D	6390	D	6550	D	6540	D	6500	D
10WBG0006	NB Peck off-ramp	Valley off-ramp	5910	C	6010	C	5990	C	5990	C	6060	C	6120	C	6130	C	6110	C	6280	C	6270	C	6220	C
10WBG0007	Valley off-ramp	Valley on-ramp	5820	B	5910	C	5870	C	5860	C	5930	C	5990	C	6000	C	5990	C	6150	C	6150	C	6100	C
10WBG0008	Valley on-ramp	SB Peck off-ramp	6200	C	6300	C	6280	C	6280	C	6340	C	6410	C	6420	C	6390	C	6570	C	6570	C	6520	C
10WBG0009	SB Peck off-ramp	Peck on-ramp	6080	C	6170	C	6160	C	6150	C	6210	C	6280	C	6290	C	6270	C	6440	C	6440	C	6400	C
10WBG0010	Peck on-ramp	Santa Anita off-ramp	6570	C	6650	C	6630	C	6630	C	6680	C	6720	C	6730	C	6700	C	6850	C	6860	C	6810	C
10WBG0011	Santa Anita off-ramp	Santa Anita on-ramp	5840	C	5920	C	5920	C	5940	C	5970	C	6010	C	6030	C	6000	C	6160	C	6150	C	6100	C
10WBG0012	Santa Anita on-ramp	Temple City off-ramp	6830	E	6910	E	6910	D	6920	D	6970	E	6990	E	7010	E	6980	D	7110	D	7110	D	7060	D
10WBG0013	Temple City off-ramp	Temple City on-ramp	5910	C	5990	C	6100	C	6100	C	6150	C	6220	C	6230	C	6220	C	6430	C	6430	C	6360	C
10WBG0014	Temple City on-ramp	Rosemead off-ramp	6860	D	6940	D	7000	D	7000	D	7050	D	7090	D	7100	D	7090	D	7270	E	7280	E	7210	D
10WBG0015	Rosemead off-ramp	Rosemead on-ramp	6130	C	6210	C	6150	C	6150	C	6180	C	6230	C	6250	C	6230	C	6370	C	6380	C	6330	C
10WBG0016	Rosemead on-ramp	Walnut Grove off-ramp	7210	D	7280	D	7320	D	7320	D	7360	D	7390	D	7400	D	7390	D	7550	D	7560	D	7490	D
10WBG0017	Walnut Grove off-ramp	Walnut Grove on-ramp	6870	D	6910	D	6980	D	6980	D	7000	D	7030	D	7040	D	7030	D	7190	D	7200	D	7140	D
10WBG0018	Walnut Grove on-ramp	San Gabriel off-ramp	7310	D	7350	D	7360	D	7360	D	7380	D	7410	D	7420	D	7410	D	7570	D	7590	D	7510	D
10WBG0019	San Gabriel off-ramp	San Gabriel on-ramp	6720	D	6790	D	6800	D	6800	D	6870	D	6870	D	6880	D	6870	D	7020	D	7050	D	6960	D
10WBG0020	San Gabriel on-ramp	Del Mar off-ramp	7270	E	7340	E	7260	E	7260	E	7330	E	7310	E	7300	E	7310	E	7490	E	7520	E	7420	E
10WBG0021	Del Mar off-ramp	NB Del Mar on-ramp	6640	D	6710	D	6590	D	6590	D	6670	D	6620	D	6620	D	6630	D	6820	D	6840	D	6740	D
10WBG0022	NB Del Mar on-ramp	SB Del Mar on-ramp	6800	D	6870	D	6790	D	6790	D	6860	D	6820	D	6820	D	6830	D	7000	D	7030	D	6930	D
10WBG0023	SB Del Mar on-ramp	New off-ramp	7040	C	7100	C	7070	C	7070	C	7140	C	7090	C	7090	C	7090	C	7280	C	7300	C	7200	C
10WBG0024	New off-ramp	New on-ramp	6180	C	6250	C	6230	C	6240	C	6310	C	6260	C	6260	C	6270	C	6480	D	6510	D	6400	C
10WBG0025	New on-ramp	Garfield off-ramp	6430	D	6490	D	6440	D	6450	D	6530	D	6470	D	6470	D	6480	D	6670	D	6710	D	6590	D
10WBG0026	Garfield off-ramp	Garfield on-ramp	5600	C	5670	C	5610	C	5620	C	5680	C	5610	C	5610	C	5610	C	5790	C	5820	C	5700	C
10WBG0027	Garfield on-ramp	Atlantic off-ramp	6160	D	6240	D	6060	D	6080	D	6200	D	6110	D	6110	D	6110	D	6370	D	6410	D	6280	D
10WBG0028	Atlantic off-ramp	Atlantic on-ramp	5230	C	5320	C	5120	C	5130	C	5250	C	5170	C	5160	C	5160	C	5450	C	5490	C	5350	C
10WBG0029	Atlantic on-ramp	Fremont off-ramp	5710	C	5780	D	5350	C	5370	C	5620	C	5520	C	5520	C	5520	C	5760	D	5800	D	5660	C
10WBG0030	Fremont off-ramp	Fremont on-ramp	5060	C	5110	C	4700	C	4710	C	5000	C	4780	C	4780	C	4780	C	5010	C	5040	C	4910	C
10WBG0031	Fremont on-ramp	I-710/Eastern off-ramp	5370	C	5420	C	4880	C	4880	C	5290	C	5180	C	5160	C	5170	C	5440	C	5540	C	5280	C
10WBG0032	I-710/Eastern off-ramp	Campus on-ramp	3500	C	3570	C	3650	C	3550	C	3370	B	3420	B	3530	C	3440	B	3310	B	3270	B	3250	B
10WBG0033	Campus on-ramp	I-710 on-ramp	4200	B	4260	B	4300	B	4210	B	4080	B	4100	B	4210	B	4100	B	4060	B	4020	B	3990	B
10WBG0034	I-710 on-ramp	Herbert on-ramp	6180	B	6220	B	6250	B	6220	B	6260	B	6310	B	6320	B	6250	B	5980	B	5900	B	6090	B
10WBG0035	Herbert on-ramp	Soto off-ramp	6640	D	6700	D	6720	D	6700	D	6730	D	6800	D	6810	D	6730	D	6460	D	6370	D	6560	D
10WBG0036	Soto off-ramp	WB I-10/SB I-5 off-ramp	5680	B	5730	B	5730	B	5700	B	5760	B	5780	B	5800	B	5700	B	5450	B	5360	B	5540	B
10WBG0037	WB I-10/SB I-5 off-ramp	NB I-5 off-ramp	3740	B	3780	B	3790	B	3770	B	3770	B	3640	B	3680	B	3570	B	3240	B	3170	B	3310	B
10WBG0038	NB I-5 off-ramp	West of NB I-5 off-ramp	1770	A	1800	A	1890	A	1890	A	1820	A	1900	A	1950	A	1910	A	2070	A	2050	A	2050	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-50

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - AM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
210EBGP0001	West of NB I-5 on-ramp	NB I-5 on-ramp	4170	C	4320	C	4250	C	4160	C	4300	C	4400	C	4340	C	4390	C	4580	D	4670	D	4610	D
210EBGP0002	NB I-5 on-ramp	Yarnell off-ramp	4740	C	4890	C	4820	C	4730	C	4870	C	4960	C	4900	C	4950	C	5140	C	5230	C	5170	C
210EBGP0003	Yarnell off-ramp	Yarnell on-ramp	4400	C	4540	D	4470	C	4410	C	4520	D	4620	D	4520	D	4580	D	4830	D	4860	D	4800	D
210EBGP0004	Yarnell on-ramp	Roxford off-ramp	4800	D	4930	D	4860	D	4790	D	4920	D	5020	D	5020	D	5010	D	5260	D	5290	D	5240	D
210EBGP0005	Roxford off-ramp	Roxford on-ramp	4420	C	4540	D	4480	C	4420	C	4530	D	4620	D	4630	D	4620	D	4820	D	4840	D	4810	D
210EBGP0006	Roxford on-ramp	Polk off-ramp	4830	D	4950	D	4910	D	4850	D	4920	D	5010	D	5040	D	4990	D	5210	D	5250	D	5200	D
210EBGP0007	Polk off-ramp	Polk on-ramp	4550	D	4680	D	4630	D	4580	D	4640	D	4740	D	4770	D	4720	D	4990	D	5040	D	4960	D
210EBGP0008	Polk on-ramp	Hubbard off-ramp	5860	F	5970	F	5930	F	5880	F	5950	F	6050	F	6100	F	6040	F	6310	F	6360	F	6320	F
210EBGP0009	Hubbard off-ramp	Hubbard on-ramp	5510	E	5620	E	5580	E	5530	E	5600	E	5710	E	5750	E	5690	E	5960	E	6020	E	5970	E
210EBGP0010	Hubbard on-ramp	Maclay off-ramp	6950	F	7060	F	7020	F	6970	F	7020	F	7130	F	7180	F	7110	F	7360	F	7420	F	7390	F
210EBGP0011	Maclay off-ramp	Maclay on-ramp	6560	F	6660	F	6630	F	6600	F	6620	F	6740	F	6780	F	6700	F	6980	F	7020	F	6990	F
210EBGP0012	Maclay on-ramp	WB SR118 off-ramp	7590	F	7680	F	7660	F	7630	F	7640	F	7770	F	7800	F	7730	F	8000	F	8050	F	8000	F
210EBGP0013	WB SR118 off-ramp	Paxton off-ramp	4270	D	4380	D	4350	D	4330	D	4350	D	4510	D	4550	D	4460	D	4790	D	4840	D	4780	D
210EBGP0014	Paxton off-ramp	Paxton on-ramp	3830	C	3920	C	3910	C	3890	C	3890	C	4050	C	4100	C	4000	C	4390	C	4420	C	4350	C
210EBGP0015	Paxton on-ramp	EB SR118 on-ramp	4010	C	4100	C	4100	C	4060	C	4080	C	4270	C	4320	C	4210	C	4620	D	4640	D	4580	D
210EBGP0016	EB SR118 on-ramp	Osborne off-ramp	6090	D	6150	D	6110	D	6090	D	6090	D	6250	D	6290	D	6160	D	6480	D	6570	D	6460	D
210EBGP0017	Osborne off-ramp	Osborne on-ramp	5560	C	5620	C	5580	C	5550	C	5550	C	5710	C	5750	C	5630	C	5940	C	6040	D	5930	C
210EBGP0018	Osborne on-ramp	Wheatland off-ramp	6030	D	6090	D	6040	D	6020	D	6020	D	6180	D	6220	D	6090	D	6410	D	6520	D	6390	D
210EBGP0019	Wheatland off-ramp	Wheatland on-ramp	6120	D	6140	D	6130	D	6110	D	6060	D	6220	D	6260	D	6140	D	6450	D	6560	D	6440	D
210EBGP0020	Wheatland on-ramp	Sunland off-ramp	6260	D	6270	D	6270	D	6250	D	6200	D	6370	D	6410	D	6280	D	6590	D	6700	D	6580	D
210EBGP0021	Sunland off-ramp	WB Sunland on-ramp	5700	C	5710	C	5710	C	5690	C	5640	C	5810	C	5850	C	5720	C	6040	D	6150	D	6030	D
210EBGP0022	WB Sunland on-ramp	EB Sunland on-ramp	6250	D	6260	D	6250	D	6240	D	6180	D	6350	D	6370	D	6250	D	6550	D	6680	D	6540	D
210EBGP0023	EB Sunland on-ramp	La Tuna Canyon off-ramp	6460	D	6470	D	6470	D	6450	D	6390	D	6570	D	6610	D	6470	D	6790	D	6910	D	6790	D
210EBGP0024	La Tuna Canyon off-ramp	La Tuna Canyon on-ramp	6410	D	6420	D	6410	D	6420	D	6340	D	6520	D	6560	D	6420	D	6730	D	6870	D	6730	D
210EBGP0025	La Tuna Canyon on-ramp	Lowell off-ramp	6820	D	6830	D	6820	D	6830	D	6750	D	6920	D	6960	D	6820	D	7110	D	7270	D	7120	D
210EBGP0026	Lowell off-ramp	Lowell/Honolulu on-ramp	6690	D	6700	D	6690	D	6670	D	6620	D	6790	D	6830	D	6690	D	6980	D	7140	D	6990	D
210EBGP0027	Lowell/Honolulu on-ramp	Pennsylvania off-ramp	8660	D	8670	D	8680	D	8670	D	8530	D	8780	E	8840	E	8610	D	9000	E	9180	E	9040	E
210EBGP0028	Pennsylvania off-ramp	Pennsylvania on-ramp	8330	F	8330	F	8340	F	8330	F	8190	E	8440	F	8500	F	8270	E	8690	F	8850	F	8710	F
210EBGP0029	Pennsylvania on-ramp	La Crescenta on-ramp	9440	F	9440	F	9470	F	9410	F	9380	F	9570	F	9630	F	9440	F	9800	F	9960	F	9830	F
210EBGP0030	La Crescenta on-ramp	Ocean View off-ramp	10,520	F	10,530	F	10,530	F	10,500	F	10,460	F	10,670	F	10,710	F	10,530	F	10,900	F	11,050	F	10,930	F
210EBGP0031	Ocean View off-ramp	East Ocean View off-ramp	10,030	D	10,040	D	10,050	D	10,010	D	9970	D	10,180	D	10,220	D	10,040	D	10,410	D	10,570	D	10,440	D

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-51

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - PM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210EBGP0001	West of NB I-5 on-ramp	NB I-5 on-ramp	2770	B	2800	B	2780	B	2780	B	2810	B	2940	B	2990	B	2890	B	3300	B	3360	C	3240	B
210EBGP0002	NB I-5 on-ramp	Yarnell off-ramp	3150	B	3170	B	3160	B	3150	B	3180	B	3300	B	3360	B	3260	B	3670	B	3720	B	3610	B
210EBGP0003	Yarnell off-ramp	Yarnell on-ramp	2830	B	2860	B	2840	B	2840	B	2860	B	2990	B	3040	B	2950	B	3360	C	3410	C	3300	B
210EBGP0004	Yarnell on-ramp	Roxford off-ramp	3020	C	3040	C	3020	C	3020	C	3050	C	3200	C	3250	C	3150	C	3560	C	3620	C	3510	C
210EBGP0005	Roxford off-ramp	Roxford on-ramp	2650	B	2680	B	2660	B	2660	B	2680	B	2830	B	2880	B	2790	B	3190	B	3250	B	3140	B
210EBGP0006	Roxford on-ramp	Polk off-ramp	2960	C	2980	C	2970	C	2970	C	2990	C	3150	C	3200	C	3110	C	3500	C	3560	C	3450	C
210EBGP0007	Polk off-ramp	Polk on-ramp	2740	B	2760	B	2750	B	2740	B	2760	B	2930	B	2980	B	2880	B	3290	B	3340	C	3230	B
210EBGP0008	Polk on-ramp	Hubbard off-ramp	3370	C	3400	C	3380	C	3380	C	3400	C	3590	C	3640	C	3540	C	3950	D	4000	D	3890	C
210EBGP0009	Hubbard off-ramp	Hubbard on-ramp	3060	B	3080	B	3070	B	3060	B	3090	B	3270	B	3320	C	3230	B	3630	C	3680	C	3580	C
210EBGP0010	Hubbard on-ramp	Maclay off-ramp	3970	D	3990	D	3980	D	3980	D	3990	D	4180	D	4230	D	4130	D	4530	D	4580	D	4480	D
210EBGP0011	Maclay off-ramp	Maclay on-ramp	3690	C	3700	C	3690	C	3690	C	3700	C	3890	C	3940	C	3840	C	4240	C	4300	C	4190	C
210EBGP0012	Maclay on-ramp	WB SR118 off-ramp	4370	C	4380	C	4380	C	4380	C	4380	C	4600	C	4640	C	4550	C	4940	C	5000	C	4890	C
210EBGP0013	WB SR118 off-ramp	Paxton off-ramp	2820	C	2840	C	2820	C	2820	C	2840	C	3070	C	3120	C	3020	C	3420	C	3470	C	3370	C
210EBGP0014	Paxton off-ramp	Paxton on-ramp	2440	B	2460	B	2450	B	2440	B	2460	B	2700	B	2750	B	2640	B	3050	B	3100	B	3000	B
210EBGP0015	Paxton on-ramp	EB SR118 on-ramp	2630	B	2650	B	2640	B	2630	B	2660	B	2910	B	2950	B	2850	B	3250	B	3310	C	3200	B
210EBGP0016	EB SR118 on-ramp	Osborne off-ramp	4870	C	4880	C	4900	C	4890	C	4870	C	5030	C	5050	C	4970	C	5300	C	5390	D	5270	C
210EBGP0017	Osborne off-ramp	Osborne on-ramp	4410	B	4410	C	4440	C	4420	C	4400	B	4560	C	4580	C	4500	C	4830	C	4920	C	4800	C
210EBGP0018	Osborne on-ramp	Wheatland off-ramp	4730	C	4740	C	4760	C	4740	C	4730	C	4900	C	4920	C	4840	C	5180	C	5270	C	5160	C
210EBGP0019	Wheatland off-ramp	Wheatland on-ramp	4610	C	4620	C	4650	C	4630	C	4610	C	4780	C	4800	C	4720	C	5070	C	5150	C	5040	C
210EBGP0020	Wheatland on-ramp	Sunland off-ramp	4700	C	4710	C	4740	C	4720	C	4700	C	4870	C	4890	C	4810	C	5160	C	5240	D	5130	C
210EBGP0021	Sunland off-ramp	WB Sunland on-ramp	3940	B	3950	B	3970	B	3950	B	3940	B	4110	B	4130	B	4050	B	4410	C	4490	C	4380	B
210EBGP0022	WB Sunland on-ramp	EB Sunland on-ramp	4160	B	4170	B	4200	B	4180	B	4160	B	4330	B	4360	B	4270	B	4620	C	4710	C	4590	C
210EBGP0023	EB Sunland on-ramp	La Tuna Canyon off-ramp	4260	C	4280	C	4300	C	4280	C	4260	C	4440	C	4460	C	4370	C	4740	C	4820	C	4710	C
210EBGP0024	La Tuna Canyon off-ramp	La Tuna Canyon on-ramp	4170	B	4180	B	4200	B	4180	B	4170	B	4340	B	4360	B	4270	B	4600	C	4680	C	4570	C
210EBGP0025	La Tuna Canyon on-ramp	Lowell off-ramp	4750	C	4770	C	4790	C	4770	C	4760	C	4930	C	4950	C	4860	C	5180	C	5270	C	5150	C
210EBGP0026	Lowell off-ramp	Lowell/Honolulu on-ramp	4540	C	4560	C	4580	C	4560	C	4550	C	4720	C	4750	C	4660	C	5020	C	5110	C	4990	C
210EBGP0027	Lowell/Honolulu on-ramp	Pennsylvania off-ramp	5680	C	5690	C	5710	C	5690	C	5680	C	5850	C	5880	C	5770	C	6120	C	6220	C	6110	C
210EBGP0028	Pennsylvania off-ramp	Pennsylvania on-ramp	5200	C	5210	C	5240	C	5210	C	5190	C	5370	C	5390	C	5290	C	5650	C	5750	C	5640	C
210EBGP0029	Pennsylvania on-ramp	La Crescenta on-ramp	5750	C	5760	C	5790	C	5760	C	5750	C	5930	C	5960	C	5860	C	6230	D	6330	D	6220	D
210EBGP0030	La Crescenta on-ramp	Ocean View off-ramp	6250	C	6260	C	6290	C	6270	C	6250	C	6450	C	6480	C	6370	C	6760	D	6850	D	6750	D
210EBGP0031	Ocean View off-ramp	East Ocean View off-ramp	5680	B	5690	B	5720	B	5700	B	5680	B	5880	B	5910	B	5800	B	6190	B	6280	B	6180	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-52

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - AM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
Segment ID	From	To	2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
210WBG0056	East of Ocean View on-ramp	Ocean View on-ramp	4790	B	4800	B	4800	B	4790	B	4870	B	4920	B	4910	B	4870	B	5100	B	5090	B	5100	B
210WBG0057	Ocean View on-ramp	La Crescenta off-ramp	5230	B	5240	B	5230	B	5230	B	5300	B	5360	B	5340	B	5300	B	5530	B	5520	B	5530	B
210WBG0058	La Crescenta off-ramp	Pennsylvania off-ramp	4710	C	4710	C	4710	C	4700	C	4780	C	4830	C	4810	C	4780	C	5000	C	4980	C	5000	C
210WBG0059	Pennsylvania off-ramp	Pennsylvania on-ramp	4250	B	4260	B	4250	B	4250	B	4320	B	4370	B	4360	B	4330	B	4550	B	4530	B	4540	B
210WBG0060	Pennsylvania on-ramp	Lowell off-ramp	4740	B	4750	B	4740	B	4730	B	4810	B	4860	B	4840	B	4810	B	5030	B	5010	B	5020	B
210WBG0061	Lowell off-ramp	Honolulu on-ramp	3480	B	3490	B	3480	B	3470	B	3550	B	3600	B	3580	B	3560	B	3760	B	3740	B	3740	B
210WBG0062	Honolulu on-ramp	La Tuna Canyon off-ramp	3690	C	3700	C	3680	C	3680	C	3760	C	3800	C	3780	C	3760	C	3970	C	3940	C	3950	C
210WBG0063	La Tuna Canyon off-ramp	EB La Tuna Canyon on-ramp	3250	B	3260	B	3260	B	3260	B	3330	B	3380	B	3360	B	3340	B	3550	B	3530	B	3530	B
210WBG0064	EB La Tuna Canyon on-ramp	WB La Tuna Canyon on-ramp	3260	B	3270	B	3270	B	3270	B	3340	B	3390	B	3370	B	3350	B	3560	B	3540	B	3540	B
210WBG0065	WB La Tuna Canyon on-ramp	Sunland off-ramp	3330	B	3340	B	3340	B	3340	B	3410	B	3450	B	3440	B	3420	B	3630	B	3600	B	3610	B
210WBG0066	Sunland off-ramp	EB Sunland on-ramp	3090	B	3090	B	3100	B	3100	B	3160	B	3210	B	3190	B	3180	B	3390	B	3360	B	3360	B
210WBG0067	EB Sunland on-ramp	WB Sunland on-ramp	3190	B	3190	B	3200	B	3200	B	3250	B	3320	B	3310	B	3280	B	3480	B	3470	B	3450	B
210WBG0068	WB Sunland on-ramp	Wheatland off-ramp	3290	B	3300	B	3300	B	3300	B	3370	B	3410	B	3390	B	3370	B	3580	B	3550	B	3550	B
210WBG0069	Wheatland off-ramp	Wheatland on-ramp	3220	B	3230	B	3230	B	3230	B	3300	B	3340	B	3320	B	3310	B	3510	B	3480	B	3480	B
210WBG0070	Wheatland on-ramp	Osborne off-ramp	3320	B	3320	B	3330	B	3330	B	3390	B	3440	B	3420	B	3400	B	3610	B	3580	B	3580	B
210WBG0071	Osborne off-ramp	Osborne on-ramp	3090	B	3100	B	3100	B	3110	B	3170	B	3200	B	3180	B	3170	B	3370	B	3340	B	3340	B
210WBG0072	Osborne on-ramp	WB SR118 off-ramp	3710	B	3710	B	3720	B	3720	B	3790	B	3820	B	3800	B	3790	B	3980	B	3950	B	3950	B
210WBG0073	WB SR118 off-ramp	Paxton off-ramp	2040	B	2070	B	2130	B	2140	B	2210	B	2280	B	2250	B	2260	B	2480	B	2440	B	2440	B
210WBG0074	Paxton off-ramp	Paxton on-ramp	1860	A	1890	A	1950	A	1970	A	2040	B	2080	B	2040	B	2060	B	2280	B	2240	B	2240	B
210WBG0075	Paxton on-ramp	EB SR118 on-ramp	2370	B	2410	B	2450	B	2470	B	2550	B	2610	B	2570	B	2590	B	2780	B	2750	B	2750	B
210WBG0076	EB SR118 on-ramp	Maclay off-ramp	3760	B	3770	B	3850	B	3860	B	3910	B	3950	B	3900	B	3940	B	4140	C	4100	C	4100	C
210WBG0077	Maclay off-ramp	Maclay on-ramp	3070	B	3090	B	3150	B	3170	B	3230	B	3240	B	3190	B	3230	B	3430	C	3390	C	3380	C
210WBG0078	Maclay on-ramp	Hubbard off-ramp	3250	C	3270	C	3340	C	3360	C	3420	C	3420	C	3380	C	3420	C	3610	C	3570	C	3570	C
210WBG0079	Hubbard off-ramp	Hubbard on-ramp	2480	B	2510	B	2560	B	2590	B	2660	B	2650	B	2610	B	2650	B	2840	B	2800	B	2800	B
210WBG0080	Hubbard on-ramp	Polk off-ramp	2790	C	2820	C	2880	C	2900	C	2980	C	2960	C	2920	C	2960	C	3150	C	3110	C	3110	C
210WBG0081	Polk off-ramp	Polk on-ramp	2260	B	2300	B	2350	B	2370	B	2440	B	2420	B	2370	B	2420	B	2620	B	2580	B	2570	B
210WBG0082	Polk on-ramp	Roxford off-ramp	2670	C	2710	C	2760	C	2770	C	2860	C	2830	C	2790	C	2830	C	3030	C	2990	C	2980	C
210WBG0083	Roxford off-ramp	Roxford on-ramp	2250	B	2280	B	2330	B	2350	B	2430	B	2410	B	2360	B	2410	B	2600	B	2560	B	2560	B
210WBG0084	Roxford on-ramp	Yarnell off-ramp	2680	C	2720	C	2760	C	2790	C	2870	C	2830	C	2800	C	2850	C	3030	C	3020	C	3020	C
210WBG0085	Yarnell off-ramp	Yarnell on-ramp	2410	B	2450	B	2480	B	2520	B	2600	B	2550	B	2510	B	2570	B	2740	B	2740	B	2730	B
210WBG0086	Yarnell on-ramp	I-5 SB off-ramp	2710	B	2750	B	2780	B	2800	B	2910	B	2850	B	2810	B	2860	B	3040	B	3070	B	3040	B
210WBG0087	I-5 SB off-ramp	West of I-5 SB off-ramp	2270	B	2310	B	2350	B	2360	B	2460	B	2430	B	2380	B	2430	B	2620	B	2580	B	2570	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-53

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
Segment ID	From	To	2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
210WBG0056	East of Ocean View on-ramp	Ocean View on-ramp	8390	C	8410	C	8400	C	8380	C	8460	C	8610	C	8540	C	8490	C	8750	C	8820	C	8760	C
210WBG0057	Ocean View on-ramp	La Crescenta off-ramp	8910	C	8920	C	8910	C	8900	C	8980	C	9130	D	9060	D	9020	D	9260	D	9330	D	9270	D
210WBG0058	La Crescenta off-ramp	Pennsylvania off-ramp	7940	D	7950	D	7940	D	7930	D	8010	D	8130	E	8050	D	8020	D	8240	E	8310	E	8250	E
210WBG0059	Pennsylvania off-ramp	Pennsylvania on-ramp	7090	C	7090	C	7100	C	7080	C	7110	C	7260	C	7180	C	7160	C	7370	C	7400	C	7320	C
210WBG0060	Pennsylvania on-ramp	Lowell off-ramp	7480	C	7480	C	7480	C	7480	C	7490	C	7670	D	7540	C	7590	D	7710	D	7730	D	7660	D
210WBG0061	Lowell off-ramp	Honolulu on-ramp	6180	D	6170	D	6160	D	6170	D	6220	D	6350	D	6210	D	6280	D	6340	D	6410	D	6330	D
210WBG0062	Honolulu on-ramp	La Tuna Canyon off-ramp	6330	D	6330	D	6330	D	6320	D	6370	D	6520	D	6360	D	6430	D	6450	D	6520	D	6450	D
210WBG0063	La Tuna Canyon off-ramp	EB La Tuna Canyon on-ramp	6030	C	6020	C	6030	C	6020	C	6070	D	6210	D	6060	D	6120	D	6160	D	6220	D	6160	D
210WBG0064	EB La Tuna Canyon on-ramp	WB La Tuna Canyon on-ramp	6040	C	6030	C	6040	C	6030	C	6080	D	6220	D	6100	D	6130	D	6190	D	6270	D	6200	D
210WBG0065	WB La Tuna Canyon on-ramp	Sunland off-ramp	6090	D	6090	D	6100	D	6080	D	6140	D	6240	D	6170	D	6150	D	6300	D	6370	D	6300	D
210WBG0066	Sunland off-ramp	EB Sunland on-ramp	5560	C	5560	C	5570	C	5550	C	5620	C	5710	C	5630	C	5620	C	5770	C	5840	C	5770	C
210WBG0067	EB Sunland on-ramp	WB Sunland on-ramp	5850	C	5850	C	5850	C	5840	C	5900	C	5980	C	5910	C	5910	C	6040	C	6100	D	6040	C
210WBG0068	WB Sunland on-ramp	Wheatland off-ramp	6050	D	6050	D	6050	D	6040	D	6100	D	6200	D	6120	D	6110	D	6250	D	6300	D	6240	D
210WBG0069	Wheatland off-ramp	Wheatland on-ramp	5900	C	5910	C	5930	C	5900	C	5960	C	6040	C	5970	C	5970	C	6090	D	6150	D	6090	D
210WBG0070	Wheatland on-ramp	Osborne off-ramp	6020	D	6010	D	6040	D	6010	D	6070	D	6150	D	6080	D	6070	D	6200	D	6260	D	6190	D
210WBG0071	Osborne off-ramp	Osborne on-ramp	5700	C	5710	C	5710	C	5690	C	5760	C	5850	C	5790	C	5760	C	5940	C	6010	C	5920	C
210WBG0072	Osborne on-ramp	WB SR118 off-ramp	6170	D	6170	D	6170	D	6160	D	6220	D	6310	D	6250	D	6230	D	6400	D	6460	D	6380	D
210WBG0073	WB SR118 off-ramp	Paxton off-ramp	3610	B	3700	B	3600	B	3600	B	3740	B	3930	B	3900	B	3840	B	4050	B	4070	B	4020	B
210WBG0074	Paxton off-ramp	Paxton on-ramp	3390	C	3490	C	3380	C	3380	C	3530	C	3700	C	3680	C	3610	C	3840	C	3850	C	3810	C
210WBG0075	Paxton on-ramp	EB SR118 on-ramp	3960	F	4070	C	3950	C	3940	C	4100	C	4260	C	4240	C	4170	C	4380	C	4360	C	4350	C
210WBG0076	EB SR118 on-ramp	Maclay off-ramp	6910	E	6990	F	6890	F	6890	F	7030	F	7180	F	7140	F	7080	F	7260	F	7250	F	7240	F
210WBG0077	Maclay off-ramp	Maclay on-ramp	5850	E	5940	E	5830	E	5830	E	5980	E	6110	E	6080	E	6030	E	6190	E	6180	E	6170	E
210WBG0078	Maclay on-ramp	Hubbard off-ramp	6150	F	6250	F	6130	F	6130	F	6280	F	6420	F	6380	F	6320	F	6490	F	6480	F	6470	F
210WBG0079	Hubbard off-ramp	Hubbard on-ramp	5050	D	5180	D	5030	D	5030	D	5220	D	5340	D	5300	D	5250	D	5420	D	5400	D	5390	D
210WBG0080	Hubbard on-ramp	Polk off-ramp	5270	E	5390	E	5240	E	5240	E	5430	E	5540	E	5500	E	5460	E	5610	E	5590	E	5580	E
210WBG0081	Polk off-ramp	Polk on-ramp	4530	C	4660	D	4510	C	4510	C	4700	D	4800	D	4760	D	4730	D	4890	D	4880	D	4860	D
210WBG0082	Polk on-ramp	Roxford off-ramp	4780	D	4920	D	4760	D	4760	D	4960	D	5070	D	5030	D	4990	D	5170	D	5150	D	5130	D
210WBG0083	Roxford off-ramp	Roxford on-ramp	4460	C	4600	D	4440	C	4440	C	4640	D	4710	D	4700	D	4650	D	4790	D	4830	D	4800	D
210WBG0084	Roxford on-ramp	Yarnell off-ramp	4820	D	4970	D	4800	D	4800	D	5020	D	5060	D	5040	D	5000	D	5140	D	5160	D	5150	D
210WBG0085	Yarnell off-ramp	Yarnell on-ramp	4520	C	4670	D	4540	C	4560	D	4700	D	4700	D	4700	D	4710	D	4800	D	4800	D	4810	D
210WBG0086	Yarnell on-ramp	I-5 SB off-ramp	4790	C	4940	C	4790	C	4810	C	4990	C	4980	C	4970	C	4960	C	5080	C	5070	C	5060	C
210WBG0087	I-5 SB off-ramp	West of I-5 SB off-ramp	3970	C	4050	C	3970	C	3990	C	4100	C	4130	C	4120	C	4110	C	4220	C	4200	C	4200	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-54

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 2 to SR 134)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - AM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
210EBGP0031	West of SR 2 off-ramp	SR 2 off-ramp	10,030	D	10,040	D	10,050	D	10,010	D	9970	D	10,180	D	10,220	D	10,040	D	10,410	D	10,570	D	10,440	D
210EBGP0032	SR 2 off-ramp	Ocean View on-ramp	4490	C	4490	C	4510	C	4490	C	4470	C	4930	C	4920	C	4820	C	5350	C	5460	C	5330	C
210EBGP0033	Ocean View on-ramp	SR 2 on-ramp	5200	C	5210	C	5240	C	5220	C	5190	C	5670	C	5660	C	5560	C	6060	D	6160	D	6030	D
210EBGP0034	SR 2 on-ramp	Angeles Crest Hwy off-ramp	5880	C	5890	C	5900	C	5880	C	5850	C	6210	C	6220	C	6120	C	6520	C	6630	C	6510	C
210EBGP0035	Angeles Crest Hwy off-ramp	SB Angeles Crest Hwy on-ramp	5400	C	5410	C	5430	C	5420	C	5390	C	5880	C	5870	C	5760	C	6260	D	6360	D	6240	D
210EBGP0036	SB Angeles Crest Hwy on-ramp	NB Angeles Crest Hwy on-ramp	5850	C	5860	C	5950	C	5930	C	5850	C	6420	D	6410	D	6300	D	6790	D	6920	D	6780	D
210EBGP0037	NB Angeles Crest Hwy on-ramp	Gould off-ramp	6060	C	6070	C	6190	C	6150	C	6070	C	6760	C	6750	C	6620	C	7160	D	7250	D	7140	D
210EBGP0038	Gould off-ramp	Foothill on-ramp	5310	C	5310	C	5440	C	5400	C	5310	C	6000	D	6000	D	5870	C	6410	D	6500	D	6390	D
210EBGP0039	Foothill on-ramp	Berkshire off-ramp	5800	C	5810	C	5940	C	5900	C	5820	C	6520	C	6620	C	6550	C	6930	D	7120	D	6980	D
210EBGP0040	Berkshire off-ramp	Berkshire on-ramp	5270	C	5280	C	5410	C	5370	C	5290	C	5990	D	6090	D	5910	C	6100	D	6350	D	6130	D
210EBGP0041	Berkshire on-ramp	Arroyo/Windsor off-ramp	5480	D	5480	D	5620	D	5580	D	5490	D	6220	D	6310	D	6120	D	6360	D	6610	D	6390	D
210EBGP0042	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	4990	C	4990	C	5130	C	5090	C	5010	C	5740	C	5860	C	5770	C	6270	D	6490	D	6370	D
210EBGP0043	Arroyo/Windsor on-ramp	Lincoln/Washington off-ramp	5550	C	5550	C	5700	C	5660	C	5570	C	6250	C	6350	C	6270	C	6720	C	6980	D	6860	C
210EBGP0044	Lincoln/Washington off-ramp	Lincoln on-ramp	5380	C	5370	C	5530	C	5490	C	5390	C	6060	D	6120	D	6040	D	6530	D	6770	D	6640	D
210EBGP0045	Lincoln on-ramp	Soto/Mountain off-ramp	6270	C	6270	C	6430	C	6390	C	6280	C	7000	D	7000	D	6920	D	7520	D	7730	D	7570	D
210EBGP0046	Soto/Mountain off-ramp	Soto/Mountain on-ramp	6110	D	6100	D	6270	D	6230	D	6120	D	6900	D	6910	D	6840	D	7460	E	7660	E	7510	E
210EBGP0047	Soto/Mountain on-ramp	WB I-210/EB SR 134 off-ramp	6670	F	6660	F	6840	F	6800	F	6690	F	7460	F	7460	F	7390	F	8160	F	8380	F	8150	F
210EBGP0048	WB I-210/EB SR 134 off-ramp	Colorado off-ramp	840	A	820	A	980	A	920	A	830	A	2810	C	3300	D	3190	D	4400	F	4440	F	4140	F
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp	230	A	210	A	370	A	330	A	270	A	1460	B	1910	B	1830	B	3480	D	3540	D	3200	D
210EBGP0050	WB SR 134/WB I-210 on-ramp	EB SR 134 on-ramp	1700	B	1680	B	1740	B	1820	B	1750	B												
210EBGP0051	EB SR 134 on-ramp	Del Mar off-ramp	2420	D	2400	D	2540	D	2610	E	2520	D												
210EBGP0052	Del Mar off-ramp	South of Del Mar off-ramp	1720	B	1700	B	1620	B	1670	B	1620	B												

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-55

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 2 to SR 134)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - PM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)	Single Bore (Toll-No Truck)	Single Bore (Toll-Express Bus)	Dual Bore (No Toll)	Dual Bore (No Toll-No Trucks)	Dual Bore (Toll)						
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS				
210EBGP0031	West of SR 2 off-ramp	SR 2 off-ramp	5680	B	5690	B	5720	B	5700	B	5680	B	5880	B	5910	B	5800	B	6190	B	6280	B	6180	B
210EBGP0032	SR 2 off-ramp	Ocean View on-ramp	3440	B	3450	B	3480	B	3470	B	3440	B	3940	B	3960	B	3870	B	4320	B	4390	B	4280	B
210EBGP0033	Ocean View on-ramp	SR 2 on-ramp	3840	B	3850	B	3880	B	3870	B	3840	B	4370	B	4390	B	4290	B	4720	C	4800	C	4700	C
210EBGP0034	SR 2 on-ramp	Angeles Crest Hwy off-ramp	4390	B	4410	B	4420	B	4400	B	4400	B	4840	B	4860	B	4780	B	5140	B	5220	C	5120	B
210EBGP0035	Angeles Crest Hwy off-ramp	SB Angeles Crest Hwy on-ramp	3740	B	3760	B	3790	B	3760	B	3760	B	4280	B	4300	B	4210	B	4680	C	4750	C	4650	C
210EBGP0036	SB Angeles Crest Hwy on-ramp	NB Angeles Crest Hwy on-ramp	3900	B	3930	B	3950	B	3930	B	3940	B	4520	C	4540	C	4450	C	4920	C	5000	C	4900	C
210EBGP0037	NB Angeles Crest Hwy on-ramp	Gould off-ramp	4200	B	4230	B	4260	B	4230	B	4250	B	4920	C	4940	B	4850	B	5350	C	5430	C	5340	C
210EBGP0038	Gould off-ramp	Foothill on-ramp	3830	B	3870	B	3900	B	3870	B	3880	B	4560	C	4570	C	4480	C	4990	C	5060	C	4970	C
210EBGP0039	Foothill on-ramp	Berkshire off-ramp	4440	B	4470	B	4510	B	4480	B	4490	B	5180	C	5410	C	5350	B	5620	C	5850	C	5800	C
210EBGP0040	Berkshire off-ramp	Berkshire on-ramp	4240	B	4280	B	4310	B	4280	B	4290	B	4920	C	5130	C	5030	C	5180	C	5470	C	5320	C
210EBGP0041	Berkshire on-ramp	Arroyo/Windsor off-ramp	4640	C	4670	C	4700	C	4680	C	4690	C	5350	D	5560	D	5460	D	5610	D	5910	D	5750	D
210EBGP0042	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	3880	B	3910	B	3940	B	3930	B	3920	B	4650	C	4860	C	4800	C	5120	C	5340	C	5300	C
210EBGP0043	Arroyo/Windsor on-ramp	Lincoln/Washington off-ramp	4320	B	4350	B	4380	B	4370	B	4360	B	5080	B	5300	C	5240	C	5530	C	5800	C	5760	C
210EBGP0044	Lincoln/Washington off-ramp	Lincoln on-ramp	4070	B	4100	B	4130	B	4120	B	4110	B	4790	C	5000	C	4950	C	5250	C	5520	C	5480	C
210EBGP0045	Lincoln on-ramp	Soto/Mountain off-ramp	4640	B	4670	B	4710	B	4700	B	4690	B	5460	C	5630	C	5570	C	5950	C	6200	C	6170	C
210EBGP0046	Soto/Mountain off-ramp	Soto/Mountain on-ramp	4400	B	4440	C	4470	C	4460	C	4450	C	5290	C	5450	C	5380	C	5800	C	6030	C	6000	C
210EBGP0047	Soto/Mountain on-ramp	WB I-210/EB SR 134 off-ramp	4690	F	4730	F	4760	F	4750	F	4750	F	5700	F	5770	F	5700	F	6210	D	6490	F	6400	F
210EBGP0048	WB I-210/EB SR 134 off-ramp	Colorado off-ramp	730	A	740	A	790	A	800	A	780	A	2690	C	2670	C	2600	C	3500	D	3510	D	3320	D
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp	300	A	320	A	360	A	370	A	350	A	1950	B	1940	B	1860	B	2880	C	2930	C	2700	C
210EBGP0050	WB SR 134/WB I-210 on-ramp	EB SR 134 on-ramp	1540	B	1560	B	1600	B	1600	B	1570	B												
210EBGP0051	EB SR 134 on-ramp	Del Mar off-ramp	2070	C	2080	C	2140	D	2160	D	2120	D												
210EBGP0052	Del Mar off-ramp	South of Del Mar off-ramp	1450	B	1460	B	1310	A	1330	A	1310	A												

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-56

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound I-210 (SR 2 to SR 134)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - AM Peak Hour Analysis																											
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative														
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)				
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	
210WBG0036	South of Del Mar on-ramp	Del Mar on-ramp	540	A	540	A	530	A	520	A	560	A															
210WBG0037	Del Mar on-ramp	EB I-210/EB SR 134 off-ramp	1560	A	1560	A	1570	A	1570	A	1540	A															
210WBG0038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp	930	A	930	A	990	A	990	A	960	A	1780	B	1730	B	1690	B	2830	C	2730	C	2700	C			
210WBG0039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp	1320	A	1330	A	1380	A	1380	A	1360	A	2650	B	2580	B	2540	B	3640	C	3520	C	3500	C			
210WBG0040	WB I-210/EB SR 134 on-ramp	Soto/Mountain off-ramp	4640	B	4650	B	4710	B	4720	B	4740	B	5960	B	5880	B	5920	B	6530	B	6580	B	6490	B			
210WBG0041	Soto/Mountain off-ramp	Soto/Mountain on-ramp	4280	B	4290	B	4350	B	4370	B	4400	B	5240	B	5140	B	5180	B	5600	C	5630	C	5600	C			
210WBG0042	Soto/Mountain on-ramp	Lincoln off-ramp	4520	B	4530	B	4590	B	4600	B	4630	B	5430	B	5340	B	5370	B	5770	C	5800	C	5770	C			
210WBG0043	Lincoln off-ramp	Lincoln on-ramp	3860	B	3870	B	3920	B	3940	B	3960	B	4620	C	4590	C	4600	C	5040	C	5070	C	5050	C			
210WBG0044	Lincoln on-ramp	Arroyo/Windsor off-ramp	4110	B	4120	B	4170	B	4180	B	4210	B	4850	B	4830	B	4830	B	5250	C	5290	C	5280	C			
210WBG0045	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	3470	B	3470	B	3530	B	3530	B	3570	B	4230	B	4160	B	4180	B	4600	C	4600	C	4570	C			
210WBG0046	Arroyo/Windsor on-ramp	Berkshire off-ramp	4180	C	4180	C	4220	C	4220	C	4270	C	4920	C	4850	C	4850	C	5270	D	5270	D	5230	C			
210WBG0047	Berkshire off-ramp	Berkshire on-ramp	3810	B	3810	B	3840	B	3840	B	3900	B	4510	C	4440	C	4450	C	4840	C	4840	C	4790	C			
210WBG0048	Berkshire on-ramp	Foothill off-ramp	4280	B	4280	B	4300	B	4320	B	4370	B	5030	B	5000	B	4960	B	5390	C	5340	C	5340	C			
210WBG0049	Foothill off-ramp	Gould on-ramp	3180	B	3180	B	3200	B	3210	B	3250	B	3890	B	3850	B	3820	B	4230	B	4150	B	4180	B			
210WBG0050	Gould on-ramp	Angeles Crest Hwy off-ramp	3650	B	3650	B	3670	B	3670	B	3710	B	4350	B	4320	B	4290	B	4690	B	4610	B	4640	B			
210WBG0051	Angeles Crest Hwy off-ramp	NB Angeles Crest Hwy on-ramp	3220	B	3210	B	3220	B	3220	B	3280	B	3720	B	3690	B	3670	B	4010	B	3960	B	3970	B			
210WBG0052	NB Angeles Crest Hwy on-ramp	SB Angeles Crest Hwy on-ramp	3360	B	3350	B	3340	B	3350	B	3410	B	3820	B	3800	B	3780	B	4110	B	4070	B	4070	B			
210WBG0053	SB Angeles Crest Hwy on-ramp	SR 2 off-ramp	3740	B	3730	B	3660	B	3670	B	3780	B	4100	B	4090	B	4050	B	4320	B	4300	B	4310	B			
210WBG0054	SR 2 off-ramp	Ocean View off-ramp	3210	B	3200	B	3220	B	3220	B	3280	B	3710	C	3680	C	3660	C	3970	C	3930	C	3930	C			
210WBG0055	Ocean View off-ramp	SR 2 on-ramp	2800	B	2800	B	2820	B	2820	B	2880	B	3220	B	3190	B	3170	B	3490	B	3440	B	3440	B			
210WBG0056	SR 2 on-ramp	West of SR 2 on-ramp	4790	B	4800	B	4800	B	4790	B	4870	B	4920	B	4910	B	4870	B	5100	B	5090	B	5100	B			

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-57

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound I-210 (SR 2 to SR 134)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0036	South of Del Mar on-ramp	Del Mar on-ramp	560	A	560	A	580	A	560	A	580	A														
210WBG0037	Del Mar on-ramp	EB I-210/EB SR 134 off-ramp	1900	A	1900	A	1930	A	1910	A	1920	A														
210WBG0038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp	920	A	930	A	960	A	940	A	950	A	2070	B	2140	B	1930	B	4060	E	4020	E	3870	E		
210WBG0039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp	1570	A	1580	A	1620	A	1600	A	1610	A	2940	B	2970	B	2760	B	4850	D	4770	D	4620	D		
210WBG0040	WB I-210/EB SR 134 on-ramp	Soto/Mountain off-ramp	6720	B	6740	B	6780	B	6760	B	6760	B	7080	C	7280	C	7050	C	8700	C	8770	C	8660	C		
210WBG0041	Soto/Mountain off-ramp	Soto/Mountain on-ramp	6230	C	6250	C	6300	C	6290	C	6290	C	6390	C	6620	C	6410	C	7700	D	7880	D	7770	D		
210WBG0042	Soto/Mountain on-ramp	Lincoln off-ramp	6490	C	6520	C	6560	C	6560	C	6550	C	6810	C	7050	C	6820	C	7850	D	8040	D	7930	D		
210WBG0043	Lincoln off-ramp	Lincoln on-ramp	5400	C	5440	C	5480	C	5450	C	5480	C	5990	C	6150	D	6040	C	6750	D	6970	D	6870	D		
210WBG0044	Lincoln on-ramp	Arroyo/Windsor off-ramp	5610	C	5640	C	5690	C	5660	C	5680	C	6200	C	6370	C	6250	C	6950	C	7170	D	7060	D		
210WBG0045	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	5120	C	5150	C	5200	C	5170	C	5190	C	5720	C	5880	C	5760	C	6360	D	6580	D	6470	D		
210WBG0046	Arroyo/Windsor on-ramp	Berkshire off-ramp	5740	D	5770	D	5810	D	5780	D	5810	D	6260	D	6420	D	6270	D	6780	D	7010	D	6890	D		
210WBG0047	Berkshire off-ramp	Berkshire on-ramp	5580	C	5620	C	5650	C	5630	C	5660	C	6160	D	6330	D	6170	D	6720	D	6920	D	6800	D		
210WBG0048	Berkshire on-ramp	Foothill off-ramp	6080	C	6120	C	6160	C	6130	C	6170	C	6810	C	6880	C	6680	C	7370	D	7470	D	7350	D		
210WBG0049	Foothill off-ramp	Gould on-ramp	5530	C	5550	C	5600	C	5570	C	5590	C	6100	D	6170	D	6020	C	6620	D	6690	D	6590	D		
210WBG0050	Gould on-ramp	Angeles Crest Hwy off-ramp	6080	C	6110	C	6150	C	6120	C	6150	C	6660	C	6720	C	6570	C	7170	D	7240	D	7140	D		
210WBG0051	Angeles Crest Hwy off-ramp	NB Angeles Crest Hwy on-ramp	5540	C	5560	C	5560	C	5540	C	5590	C	6070	D	6120	D	5980	C	6580	D	6610	D	6530	D		
210WBG0052	NB Angeles Crest Hwy on-ramp	SB Angeles Crest Hwy on-ramp	5950	C	5980	C	5980	C	5960	C	6010	C	6490	D	6530	D	6390	D	6990	D	7020	D	6940	D		
210WBG0053	SB Angeles Crest Hwy on-ramp	SR 2 off-ramp	6140	C	6170	C	6160	C	6140	C	6190	C	6630	C	6680	C	6530	C	7080	D	7130	D	7050	D		
210WBG0054	SR 2 off-ramp	Ocean View off-ramp	5310	D	5330	D	5330	D	5310	D	5360	D	5840	D	5880	D	5740	D	6330	D	6360	D	6280	D		
210WBG0055	Ocean View off-ramp	SR 2 on-ramp	4740	C	4760	C	4770	C	4750	C	4790	C	5310	C	5340	C	5200	C	5840	C	5870	C	5790	C		
210WBG0056	SR 2 on-ramp	West of SR 2 on-ramp	8390	C	8410	C	8400	C	8380	C	8460	C	8610	C	8540	C	8490	C	8750	C	8820	C	8760	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-58

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 134 to I-605)

SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - AM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210EBGP0053	West of EB I-210 on-ramp	EB I-210 on-ramp	5330	B	5350	B	5180	B	5180	B	5220	B	5960	C	6000	C	5990	C	6250	C	6180	C	6210	C
210EBGP0054	EB I-210 on-ramp	Marengo on-ramp	8650	C	8700	C	8530	C	8550	C	8560	C	8910	C	8970	C	8830	C	8660	C	8700	C	8790	C
210EBGP0055	Marengo on-ramp	Lake off-ramp	9440	E	9490	E	9310	E	9330	E	9350	E	9710	E	9760	C	9600	C	9420	C	9450	C	9550	C
210EBGP0056	Lake off-ramp	Lake on-ramp	7930	C	7970	C	7810	C	7820	C	7820	C	7980	C	8030	D	7870	C	7610	C	7650	C	7740	C
210EBGP0057	Lake on-ramp	Hill off-ramp	8820	D	8860	D	8550	D	8500	D	8920	D	8890	D	8970	C	8710	C	8630	C	8690	C	8730	C
210EBGP0058	Hill off-ramp	Hill on-ramp	7890	C	7930	C	7630	C	7580	C	7980	C	7860	C	7930	C	7680	C	7520	C	7590	C	7620	C
210EBGP0059	Hill on-ramp	Allen on-ramp	8320	D	8360	D	8070	D	8010	D	8430	D	8300	D	8360	D	8130	D	7980	C	8020	D	8060	D
210EBGP0060	Allen on-ramp	Sierra Madre/Altadena off-ramp	8770	D	8810	D	8500	D	8440	D	8850	D	8710	D	8790	C	8540	C	8380	C	8450	C	8470	C
210EBGP0061	Sierra Madre/Altadena off-ramp	San Gabriel off-ramp	7890	D	7920	D	7610	D	7560	D	7990	D	7760	D	7830	D	7590	D	7410	D	7470	D	7500	D
210EBGP0062	San Gabriel off-ramp	San Gabriel on-ramp	7410	C	7450	C	7130	C	7080	C	7510	C	7280	C	7350	C	7130	C	6960	C	7020	C	7060	C
210EBGP0063	San Gabriel on-ramp	Madre off-ramp	8010	D	8040	D	7830	D	7760	D	8040	D	7900	D	7950	C	7770	C	7560	C	7670	C	7640	C
210EBGP0064	Madre off-ramp	SB Rosemead off-ramp	7330	C	7360	C	7180	C	7110	C	7330	C	7270	C	7300	C	7150	C	7010	C	7130	C	7070	C
210EBGP0065	SB Rosemead off-ramp	Madre on-ramp	6920	C	6950	C	6760	C	6680	C	6920	C	6860	C	6910	C	6750	C	6660	C	6770	C	6700	C
210EBGP0066	Madre on-ramp	NB Rosemead/Michillinda off-ramp	7220	C	7240	C	7070	C	6980	C	7230	C	7150	C	7200	C	7050	C	6930	C	7060	C	7000	C
210EBGP0067	NB Rosemead/Michillinda off-ramp	Rosemead on-ramp	6870	D	6900	D	6690	D	6630	D	6880	D	6780	D	6820	D	6680	D	6610	D	6730	D	6630	D
210EBGP0068	Rosemead on-ramp	Michillinda on-ramp	7050	D	7080	D	6870	D	6810	D	7060	D	6960	D	7000	D	6850	D	6820	D	6910	D	6810	D
210EBGP0069	Michillinda on-ramp	Baldwin off-ramp	7320	C	7360	C	7140	C	7080	C	7340	C	7240	C	7280	C	7130	C	7100	C	7190	C	7090	C
210EBGP0070	Baldwin off-ramp	Baldwin on-ramp	6730	D	6760	D	6580	D	6510	D	6740	D	6650	D	6680	D	6540	D	6500	D	6580	D	6490	D
210EBGP0071	Baldwin on-ramp	Santa Anita off-ramp	7120	D	7150	D	7000	D	6890	D	7240	D	7040	D	7190	D	7070	D	6970	D	6960	D	6940	D
210EBGP0072	Santa Anita off-ramp	Santa Anita on-ramp	6670	D	6710	D	6520	D	6400	D	6810	D	6590	D	6750	D	6650	D	6470	D	6460	D	6460	D
210EBGP0073	Santa Anita on-ramp	Huntington off-ramp	7060	D	7090	D	6950	D	6860	D	6980	D	6820	D	6880	D	6870	D	6830	D	6630	D	6840	D
210EBGP0074	Huntington off-ramp	WB Huntington on-ramp	6550	D	6590	D	6440	D	6350	C	6480	D	6320	C	6370	C	6360	C	6270	C	6060	C	6300	C
210EBGP0075	WB Huntington on-ramp	EB Huntington on-ramp	6630	D	6670	D	6540	D	6470	D	6570	D	6430	D	6470	D	6460	D	6380	C	6160	C	6410	D
210EBGP0076	EB Huntington on-ramp	Myrtle off-ramp	7020	E	7060	E	6930	E	6830	E	6930	E	6790	E	6840	E	6840	E	6750	E	6530	E	6770	E
210EBGP0077	Myrtle off-ramp	Myrtle on-ramp	5950	C	5990	C	5850	C	5750	C	5860	C	5710	C	5760	C	5760	C	5640	C	5440	C	5680	C
210EBGP0078	Myrtle on-ramp	Mountain off-ramp	6410	C	6440	C	6330	C	6220	C	6320	C	6190	C	6240	C	6250	C	6150	C	5940	C	6180	C
210EBGP0079	Mountain off-ramp	Buena Vista off-ramp	6020	D	6070	D	5940	C	5830	C	5940	D	5820	C	5860	C	5870	C	5770	C	5560	C	5800	C
210EBGP0080	Buena Vista off-ramp	Mountain on-ramp	5780	C	5820	C	5710	C	5600	C	5700	C	5580	C	5630	C	5640	C	5560	C	5330	C	5580	C
210EBGP0081	Mountain on-ramp	Buena Vista on-ramp	6370	C	6420	C	6070	C	6180	C	6400	C	6350	C	6320	C	6130	C	5990	C	6230	C	6080	C
210EBGP0082	Buena Vista on-ramp	I-605 off-ramp	6750	F	6790	F	6450	F	6540	F	6770	F	6730	F	6700	C	6510	C	6380	C	6610	C	6470	C
210EBGP0083	I-605 off-ramp	Mount Olive off-ramp	3860	B	3900	B	3560	B	3670	B	3920	B	3970	B	3930	B	3780	B	3770	B	4020	B	3810	B
210EBGP0084	Mount Olive off-ramp	Mount Olive on-ramp	3670	B	3710	B	3340	B	3460	B	3730	B	3760	B	3730	B	3680	B	3620	B	3920	B	3710	B
210EBGP0085	Mount Olive on-ramp	I-605 on-ramp	3790	B	3830	B	3470	B	3580	B	3850	B	3880	B	3850	B	3740	B	3710	B	3980	B	3770	B
210EBGP0086	I-605 on-ramp	East of I-605 on-ramp	5660	B	5720	B	5370	B	5470	B	5740	B	5780	B	5770	B	5660	B	5720	B	5880	C	5740	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-59
Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 134 to I-605)
SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
Segment ID	From	To	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)											
210EBGP0053	West of EB I-210 on-ramp	EB I-210 on-ramp	5790	B	5820	B	5710	B	5710	B	5760	B	6140	C	6130	C	6130	C	6440	C	6440	C	6400	C
210EBGP0054	EB I-210 on-ramp	Marengo on-ramp	12,820	E	12,890	E	12,750	E	12,740	E	12,810	E	12,900	E	12,940	E	12,910	E	13,000	E	13,050	E	12,960	E
210EBGP0055	Marengo on-ramp	Lake off-ramp	14,050	F	14,110	F	13,970	F	13,980	F	14,030	F	14,180	F	14,190	E	14,190	E	14,290	E	14,330	E	14,250	E
210EBGP0056	Lake off-ramp	Lake on-ramp	11,970	F	12,020	F	11,920	F	11,920	F	11,940	F	11,950	F	11,940	F	11,950	F	11,900	F	11,900	F	11,860	F
210EBGP0057	Lake on-ramp	Hill off-ramp	13,430	F	13,470	F	13,430	F	13,470	F	13,460	F	13,420	F	13,380	F	13,420	F	13,420	F	13,410	F	13,420	F
210EBGP0058	Hill off-ramp	Hill on-ramp	12,030	F	12,080	F	12,030	F	12,070	F	12,080	F	11,970	F	11,950	F	11,990	F	11,920	F	11,940	F	11,940	F
210EBGP0059	Hill on-ramp	Allen on-ramp	12,700	F	12,730	F	12,690	F	12,740	F	12,740	F	12,660	F	12,630	F	12,670	F	12,620	F	12,640	F	12,650	F
210EBGP0060	Allen on-ramp	Sierra Madre/Altadena off-ramp	13,230	F	13,270	F	13,200	F	13,260	F	13,270	F	13,190	F	13,160	E	13,200	E	13,160	E	13,180	E	13,190	E
210EBGP0061	Sierra Madre/Altadena off-ramp	San Gabriel off-ramp	12,000	F	12,040	F	11,970	F	12,030	F	12,030	F	11,960	F	11,940	F	11,980	F	11,820	F	11,830	F	11,860	F
210EBGP0062	San Gabriel off-ramp	San Gabriel on-ramp	11,390	F	11,430	F	11,380	F	11,410	F	11,440	F	11,310	F	11,300	F	11,340	F	11,140	F	11,160	F	11,180	F
210EBGP0063	San Gabriel on-ramp	Madre off-ramp	12,150	F	12,190	F	12,190	F	12,080	F	12,150	F	12,020	F	12,060	F	12,070	F	11,890	F	11,890	F	11,860	F
210EBGP0064	Madre off-ramp	SB Rosemead off-ramp	11,190	F	11,220	F	11,220	F	11,120	F	11,190	F	11,090	F	11,130	F	11,130	F	11,070	F	11,060	F	11,020	F
210EBGP0065	SB Rosemead off-ramp	Madre on-ramp	10,640	E	10,670	E	10,680	E	10,580	E	10,640	E	10,570	E	10,610	E	10,620	E	10,570	E	10,550	E	10,510	E
210EBGP0066	Madre on-ramp	NB Rosemead/Michillinda off-ramp	11,160	F	11,200	F	11,210	F	11,110	F	11,180	F	11,090	F	11,130	F	11,130	F	11,090	F	11,080	F	11,030	F
210EBGP0067	NB Rosemead/Michillinda off-ramp	Rosemead on-ramp	10,320	F	10,350	F	10,370	F	10,280	F	10,340	F	10,260	F	10,310	F	10,300	F	10,280	F	10,280	F	10,250	F
210EBGP0068	Rosemead on-ramp	Michillinda on-ramp	10,620	F	10,650	F	10,680	F	10,580	F	10,620	F	10,550	F	10,590	F	10,590	F	10,570	F	10,570	F	10,530	F
210EBGP0069	Michillinda on-ramp	Baldwin off-ramp	11,030	F	11,070	F	11,090	F	10,980	F	11,030	F	10,950	F	11,000	E	11,000	E	10,950	E	10,950	E	10,910	E
210EBGP0070	Baldwin off-ramp	Baldwin on-ramp	9760	F	9790	F	9820	F	9690	F	9750	F	9690	F	9720	F	9730	F	9690	F	9690	F	9640	F
210EBGP0071	Baldwin on-ramp	Santa Anita off-ramp	10,410	F	10,440	F	10,350	F	10,360	F	10,430	F	10,440	F	10,430	F	10,430	F	10,390	F	10,380	F	10,360	F
210EBGP0072	Santa Anita off-ramp	Santa Anita on-ramp	9440	F	9470	F	9350	F	9360	F	9420	F	9400	F	9400	F	9410	F	9310	F	9290	F	9290	F
210EBGP0073	Santa Anita on-ramp	Huntington off-ramp	10,110	F	10,140	F	10,050	F	9990	F	10,110	F	10,010	F	10000	F	10,030	F	9830	F	9900	F	9880	F
210EBGP0074	Huntington off-ramp	WB Huntington on-ramp	9340	F	9380	F	9310	F	9250	F	9380	F	9290	F	9300	F	9330	F	9140	F	9210	F	9190	F
210EBGP0075	WB Huntington on-ramp	EB Huntington on-ramp	9480	F	9530	F	9450	F	9400	F	9540	F	9450	F	9460	F	9500	F	9300	F	9380	F	9350	F
210EBGP0076	EB Huntington on-ramp	Myrtle off-ramp	10,120	F	10,170	F	10,100	F	10,040	F	10,160	F	10,080	F	10,100	F	10,130	F	9940	F	10,020	F	9990	F
210EBGP0077	Myrtle off-ramp	Myrtle on-ramp	8460	E	8490	E	8430	E	8370	E	8490	E	8400	E	8420	E	8440	E	8240	E	8310	E	8290	E
210EBGP0078	Myrtle on-ramp	Mountain off-ramp	9300	E	9330	E	9280	E	9220	E	9330	E	9240	E	9250	D	9270	D	9060	D	9140	D	9120	D
210EBGP0079	Mountain off-ramp	Buena Vista off-ramp	8630	F	8660	F	8620	F	8550	F	8670	F	8620	F	8600	F	8650	F	8480	F	8570	F	8530	F
210EBGP0080	Buena Vista off-ramp	Mountain on-ramp	8280	E	8330	E	8250	E	8200	E	8320	E	8230	E	8230	E	8260	E	8050	E	8130	E	8110	E
210EBGP0081	Mountain on-ramp	Buena Vista on-ramp	9310	D	9350	D	9290	D	9290	D	9340	D	9230	D	9300	D	9200	D	9130	D	9160	D	9190	D
210EBGP0082	Buena Vista on-ramp	I-605 off-ramp	9950	F	9990	F	9940	F	9940	F	9990	F	9870	F	9940	E	9850	E	9780	D	9810	E	9840	E
210EBGP0083	I-605 off-ramp	Mount Olive off-ramp	6850	D	6890	D	6870	D	6890	D	6910	D	6890	D	6970	D	6890	D	6950	D	6960	D	6980	D
210EBGP0084	Mount Olive off-ramp	Mount Olive on-ramp	6550	D	6590	D	6570	D	6580	D	6600	D	6560	D	6640	D	6560	D	6600	D	6620	D	6630	D
210EBGP0085	Mount Olive on-ramp	I-605 on-ramp	6770	D	6800	D	6780	D	6790	D	6810	D	6770	D	6850	D	6770	D	6820	D	6830	D	6850	D
210EBGP0086	I-605 on-ramp	East of I-605 on-ramp	9610	D	9690	D	9660	D	9640	D	9760	D	9660	D	9740	D	9680	D	9710	D	9750	D	9760	D

NOTES:
Volume is reported in *mean* vehicles per hour (vph) for traffic demand
Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-60

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Westbound I-210 (SR 134 to I-605)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - AM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0001	East of I-605 off-ramp	I-605 off-ramp	11,080	F	11,090	F	11,120	F	11,070	F	11,020	E	11,010	E	11,040	E	11,140	F	11,060	F	10,990	E	11,000	E		
210WBG0002	I-605 off-ramp	Mount Olive off-ramp	7380	D	7380	D	7380	D	7370	D	7270	D	7250	D	7290	D	7400	D	7320	D	7260	D	7260	D		
210WBG0003	Mount Olive off-ramp	Mount Olive on-ramp	7210	D	7210	D	7200	D	7190	D	7100	D	7080	D	7120	D	7220	D	7150	D	7090	D	7090	D		
210WBG0004	Mount Olive on-ramp	I-605 on-ramp	7540	D	7550	D	7600	D	7560	D	7410	D	7410	D	7440	D	7540	D	7440	D	7380	D	7400	D		
210WBG0005	I-605 on-ramp	Buena Vista off-ramp	9850	E	9850	E	9850	E	9800	E	9700	E	9570	E	9610	E	9690	E	9480	E	9450	E	9460	E		
210WBG0006	Buena Vista off-ramp	Mountain off-ramp	9290	D	9300	D	9310	D	9280	D	9100	D	9030	D	9080	D	9150	D	8940	D	8910	D	8920	D		
210WBG0007	Mountain off-ramp	Buena Vista on-ramp	8330	E	8330	E	8340	E	8280	E	8160	E	8040	E	8090	E	8160	E	7960	E	7930	E	7940	E		
210WBG0008	Buena Vista on-ramp	Mountain on-ramp	8820	F	8820	F	8660	F	8670	F	8720	F	8720	F	8640	F	8600	F	8600	F	8580	F	8640	F		
210WBG0009	Mountain on-ramp	Myrtle off-ramp	9330	D	9330	D	9150	D	9160	D	9230	D	9240	D	9160	D	9110	D	9120	D	9100	D	9160	D		
210WBG0010	Myrtle off-ramp	Myrtle on-ramp	8480	E	8480	E	8300	E	8310	E	8410	E	8390	E	8320	E	8280	E	8280	E	8270	E	8330	E		
210WBG0011	Myrtle on-ramp	Huntington off-ramp	9050	F	9050	F	8870	F	8890	F	8980	F	8960	F	8890	F	8850	F	8860	F	8840	F	8900	F		
210WBG0012	Huntington off-ramp	Huntington on-ramp	8360	E	8360	E	8240	E	8350	E	8280	E	8320	E	8260	E	8160	E	8180	E	8230	E	8200	E		
210WBG0013	Huntington on-ramp	Santa Anita off-ramp	9060	F	9060	F	8940	F	9050	F	8980	F	9030	F	8970	F	8870	F	8940	F	8990	F	8940	F		
210WBG0014	Santa Anita off-ramp	NB Santa Anita on-ramp	8350	E	8360	E	8230	E	8330	E	8270	E	8320	E	8240	E	8130	E	8170	E	8200	E	8170	E		
210WBG0015	NB Santa Anita on-ramp	SB Santa Anita on-ramp	9020	F	9010	F	8840	F	8980	F	8950	F	9010	F	8940	F	8810	F	8870	F	8920	F	8880	F		
210WBG0016	SB Santa Anita on-ramp	Baldwin off-ramp	9520	F	9530	F	9350	F	9490	F	9500	F	9560	F	9490	F	9370	F	9470	F	9470	F	9460	F		
210WBG0017	Baldwin off-ramp	NB Baldwin on-ramp	8880	F	8880	F	8720	E	8850	F	8840	E	8900	F	8840	E	8730	E	8830	E	8840	E	8820	E		
210WBG0018	NB Baldwin on-ramp	SB Baldwin on-ramp	9150	F	9150	F	9090	F	9090	F	9170	F	9150	F	9160	F	9160	F	9020	F	9000	F	9170	F		
210WBG0019	SB Baldwin on-ramp	Rosemead/Michillinda off-ramp	9460	F	9440	F	9400	F	9390	F	9430	F	9420	F	9460	F	9450	F	9380	F	9360	F	9480	F		
210WBG0020	Rosemead/Michillinda off-ramp	NB Michillinda on-ramp	9090	F	9090	F	9030	F	9030	F	9090	F	9090	F	9110	F	9100	F	9030	F	9010	F	9140	F		
210WBG0021	NB Michillinda on-ramp	NB Rosemead on-ramp	9650	F	9640	F	9580	F	9560	F	9630	F	9660	F	9660	F	9650	F	9560	F	9510	F	9710	F		
210WBG0022	NB Rosemead on-ramp	SB Rosemead on-ramp	10,030	E	10,040	E	10,020	E	9970	E	10,010	E	10,030	E	10000	E	10000	E	9930	E	9880	E	10,070	E		
210WBG0023	SB Rosemead on-ramp	Sierra Madre Villa off-ramp	10,470	D	10,490	D	10,460	D	10,440	D	10,450	D	10,430	D	10,430	D	10,450	D	10,350	D	10,310	D	10,450	D		
210WBG0024	Sierra Madre Villa off-ramp	Sierra Madre Villa on-ramp	10,060	E	10,070	E	10,040	E	10,030	E	10,040	E	10,020	E	10,020	E	10,030	E	9930	E	9890	E	10,030	E		
210WBG0025	Sierra Madre Villa on-ramp	Sierra Madre off-ramp	10,420	D	10,430	D	10,420	D	10,380	D	10,420	D	10,390	D	10,360	D	10,360	D	10,240	D	10,250	D	10,390	D		
210WBG0026	Sierra Madre off-ramp	Sierra Madre on-ramp	9880	E	9890	E	9880	E	9840	E	9870	E	9850	E	9800	E	9800	E	9690	D	9700	D	9840	E		
210WBG0027	Sierra Madre on-ramp	Altadena on-ramp	10,300	E	10,310	E	10,330	E	10,230	E	10,250	E	10,110	E	10,120	E	10,050	E	10000	E	10,060	E	10,090	E		
210WBG0028	Altadena on-ramp	Allen off-ramp	10,940	D	10,960	D	10,980	D	10,890	D	10,910	D	10,870	D	10,870	D	10,800	D	10,780	D	10,850	D	10,860	D		
210WBG0029	Allen off-ramp	Hill off-ramp	10,330	E	10,340	E	10,350	E	10,290	E	10,310	E	10,280	E	10,280	E	10,210	E	10,190	E	10,240	E	10,250	E		
210WBG0030	Hill off-ramp	Hill on-ramp	9960	E	9980	E	9980	E	9900	E	9920	E	9880	E	9890	E	9820	E	9810	E	9880	E	9880	E		
210WBG0031	Hill on-ramp	Lake off-ramp	10,790	D	10,810	D	10,690	D	10,720	D	10,810	D	10,850	D	10,710	D	10,790	D	10,820	D	10,890	D	10,760	D		
210WBG0032	Lake off-ramp	Lake on-ramp	9600	D	9620	D	9500	D	9540	D	9620	D	9680	D	9540	D	9620	D	9660	D	9720	D	9600	D		
210WBG0033	Lake on-ramp	Marengo off-ramp	10,620	F	10,650	F	10,530	F	10,580	F	10,660	F	10,990	F	10,850	F	10,930	F	10,930	F	11,000	F	10,880	F		
210WBG0034	Marengo off-ramp	WB I-210/ Fair Oaks off-ramp	9790	D	9820	D	9670	D	9700	D	9840	D	10,060	D	10,080	D	10,020	D	10,090	D	10,110	D	10,090	D		
210WBG0035	WB I-210/ Fair Oaks off-ramp	West of WB I-210/Fair Oaks off-ramp	6290	C	6340	C	6140	C	6170	C	6290	C	6500	C	5990	C	5990	C	6370	C	6340	C	6340	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-61

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Westbound I-210 (SR 134 to I-605)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - PM Peak Hour Analysis

Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0001	East of I-605 off-ramp	I-605 off-ramp	8060	D	8110	D	8050	D	8050	D	8100	D	8120	D	8110	D	8130	D	8120	D	8060	D	8100	D
210WBG0002	I-605 off-ramp	Mount Olive off-ramp	5420	C	5460	C	5430	C	5430	C	5440	C	5450	C	5430	C	5460	C	5400	C	5370	C	5410	C
210WBG0003	Mount Olive off-ramp	Mount Olive on-ramp	5280	C	5320	C	5290	C	5290	C	5300	C	5310	C	5300	C	5320	C	5260	C	5230	C	5270	C
210WBG0004	Mount Olive on-ramp	I-605 on-ramp	5510	C	5550	C	5500	C	5500	C	5560	C	5550	C	5530	C	5550	C	5480	C	5440	C	5490	C
210WBG0005	I-605 on-ramp	Buena Vista off-ramp	7610	D	7620	D	7550	D	7550	D	7580	D	7510	D	7510	D	7480	D	7200	D	7130	D	7300	D
210WBG0006	Buena Vista off-ramp	Mountain off-ramp	7190	C	7200	C	7130	C	7130	C	7170	C	7090	C	7090	C	7050	C	6770	C	6700	C	6870	C
210WBG0007	Mountain off-ramp	Buena Vista on-ramp	6500	D	6510	D	6430	D	6430	D	6480	D	6400	C	6400	C	6370	C	6070	C	6000	C	6170	C
210WBG0008	Buena Vista on-ramp	Mountain on-ramp	6810	D	6820	D	6800	D	6740	D	6770	D	6630	D	6660	D	6600	D	6380	C	6350	C	6450	D
210WBG0009	Mountain on-ramp	Myrtle off-ramp	7140	C	7160	C	7130	C	7070	C	7100	C	6960	C	6980	C	6930	C	6710	C	6680	C	6770	C
210WBG0010	Myrtle off-ramp	Myrtle on-ramp	6540	D	6570	D	6530	D	6470	D	6510	D	6360	C	6390	C	6330	C	6110	C	6070	C	6180	C
210WBG0011	Myrtle on-ramp	Huntington off-ramp	7050	D	7080	D	7040	D	6980	D	7020	D	6870	D	6900	D	6840	D	6600	D	6560	D	6670	D
210WBG0012	Huntington off-ramp	Huntington on-ramp	6540	D	6570	D	6460	D	6450	D	6520	D	6390	C	6430	D	6330	C	6110	C	6090	C	6210	C
210WBG0013	Huntington on-ramp	Santa Anita off-ramp	7060	D	7090	D	6980	D	6970	D	7030	D	6900	D	6950	D	6850	D	6670	D	6650	D	6760	D
210WBG0014	Santa Anita off-ramp	NB Santa Anita off-ramp	6460	D	6480	D	6380	C	6380	C	6440	D	6320	C	6370	C	6280	C	6090	C	6070	C	6190	C
210WBG0015	NB Santa Anita on-ramp	SB Santa Anita on-ramp	6810	D	6820	D	6750	D	6730	D	6780	D	6670	D	6710	D	6640	D	6480	D	6460	D	6550	D
210WBG0016	SB Santa Anita on-ramp	Baldwin off-ramp	7060	D	7080	D	7010	D	7000	D	7050	D	6960	D	6990	D	6930	D	6810	D	6800	D	6880	D
210WBG0017	Baldwin off-ramp	NB Baldwin on-ramp	6560	D	6580	D	6490	D	6480	D	6550	D	6430	D	6470	D	6400	C	6280	C	6260	C	6340	C
210WBG0018	NB Baldwin on-ramp	SB Baldwin on-ramp	7000	D	7020	D	6930	D	6920	D	6970	D	6900	D	6930	D	6910	D	6750	D	6760	D	6790	D
210WBG0019	SB Baldwin on-ramp	Rosemead/Michillinda off-ramp	7230	D	7240	D	7140	D	7130	D	7190	D	7120	D	7140	D	7120	D	6960	D	6960	D	7010	D
210WBG0020	Rosemead/Michillinda off-ramp	NB Michillinda on-ramp	6870	D	6880	D	6780	D	6780	D	6830	D	6770	D	6780	D	6760	D	6590	D	6580	D	6650	D
210WBG0021	NB Michillinda on-ramp	NB Rosemead on-ramp	7170	D	7180	D	7090	D	7080	D	7110	D	7070	D	7070	D	7050	D	6870	D	6870	D	6950	D
210WBG0022	NB Rosemead on-ramp	SB Rosemead on-ramp	7630	C	7640	C	7550	C	7550	C	7540	C	7440	C	7480	C	7430	C	7200	C	7190	C	7280	C
210WBG0023	SB Rosemead on-ramp	Sierra Madre Villa off-ramp	8230	C	8260	C	8160	C	8170	C	8170	C	8070	C	8110	C	8060	C	7790	C	7780	C	7880	C
210WBG0024	Sierra Madre Villa off-ramp	Sierra Madre Villa on-ramp	7850	C	7890	C	7790	C	7790	C	7790	C	7690	C	7730	C	7680	C	7410	C	7390	C	7490	C
210WBG0025	Sierra Madre Villa on-ramp	Sierra Madre off-ramp	8540	C	8570	C	8490	C	8490	C	8490	C	8370	C	8420	C	8330	C	7990	C	7970	C	8100	C
210WBG0026	Sierra Madre off-ramp	Sierra Madre on-ramp	7980	C	8010	C	7930	C	7930	C	7930	C	7800	C	7860	C	7770	C	7430	C	7410	C	7550	C
210WBG0027	Sierra Madre on-ramp	Altadena on-ramp	8530	D	8550	D	8450	D	8450	D	8490	D	8380	D	8380	D	8240	D	7900	C	7910	C	8070	D
210WBG0028	Altadena on-ramp	Allen off-ramp	9160	C	9180	C	9070	C	9080	C	9130	C	9130	C	9120	C	8980	C	8670	C	8680	C	8850	C
210WBG0029	Allen off-ramp	Hill off-ramp	8620	D	8650	D	8540	D	8550	D	8600	D	8600	D	8590	D	8450	D	8130	D	8140	D	8310	D
210WBG0030	Hill off-ramp	Hill on-ramp	8150	D	8170	D	8060	D	8070	D	8120	D	8140	D	8130	D	7990	C	7660	C	7670	C	7840	C
210WBG0031	Hill on-ramp	Lake off-ramp	9050	C	9070	C	9050	C	9020	C	9070	C	9110	C	9150	C	9000	C	8770	C	8740	C	8890	C
210WBG0032	Lake off-ramp	Lake on-ramp	8060	D	8080	D	8080	D	8050	D	8090	D	8110	D	8140	D	8010	C	7760	C	7730	C	7890	C
210WBG0033	Lake on-ramp	Marengo off-ramp	9300	E	9320	E	9320	E	9290	E	9340	E	9580	E	9620	E	9480	E	9180	D	9150	D	9320	D
210WBG0034	Marengo off-ramp	WB I-210/ Fair Oaks off-ramp	8840	C	8860	C	8820	C	8830	C	8840	C	9190	C	9220	C	9070	C	8690	C	8660	C	8850	C
210WBG0035	WB I-210/ Fair Oaks off-ramp	West of WB I-210/Fair Oaks off-ramp	5960	C	5980	C	5940	C	5930	C	5960	C	6500	C	6530	C	6570	C	6280	C	6210	C	6350	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-62
Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Northbound I-605
SR 710 North Study, Los Angeles County, California

Northbound Interstate 605 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605NBGP0001	South of SR 60 off-ramp	SR 60 off-ramp	7400	C	7400	C	7290	C	7310	C	7340	C	7360	C	7340	C	7320	C	7340	C	7330	C	7360	C	7360	C
605NBGP0002	SR 60 off-ramp	EB SR 60 on-ramp	4300	C	4290	C	4220	C	4220	C	4270	C	4290	C	4270	C	4260	C	4270	C	4260	C	4260	C	4260	C
605NBGP0003	EB SR 60 on-ramp	WB SR 60 on-ramp	5740	C	5730	C	5680	C	5660	C	5740	C	5730	C	5700	C	5720	C	5700	C	5690	C	5690	C	5690	C
605NBGP0004	WB SR 60 on-ramp	Valley off-ramp	6620	D	6610	D	6540	D	6520	D	6590	D	6570	D	6530	D	6510	D	6510	D	6510	D	6520	D	6520	D
605NBGP0005	Valley off-ramp	EB Valley on-ramp	5780	C	5780	C	5720	C	5720	C	5770	C	5730	C	5730	C	5730	C	5710	C	5720	C	5740	C	5740	C
605NBGP0006	EB Valley on-ramp	WB Valley on-ramp	5880	C	5880	C	5840	C	5830	C	5880	C	5830	C	5830	C	5820	C	5800	C	5830	C	5810	C	5810	C
605NBGP0007	WB Valley on-ramp	I-10 off-ramp	6640	F	6630	F	6590	F	6590	F	6630	F	6600	F	6600	F	6590	F	6570	F	6590	F	6580	F	6580	F
605NBGP0008	I-10 off-ramp	I-10 on-ramp	3070	B	3070	B	2980	B	2970	B	3050	B	2990	B	3010	B	2980	B	2940	B	2910	B	2950	B	2950	B
605NBGP0009	I-10 on-ramp	Ramona off-ramp	5650	F	5640	F	5650	F	5650	F	5690	F	5590	F	5590	F	5550	F	5530	F	5470	F	5530	F	5530	F
605NBGP0010	Ramona off-ramp	Ramona on-ramp	4940	C	4930	C	4920	C	4910	C	4950	C	4840	C	4840	C	4810	C	4780	C	4720	C	4770	C	4770	C
605NBGP0011	Ramona on-ramp	Lower Azusa/Los Angeles off-ramp	5470	D	5460	D	5440	D	5440	D	5480	D	5380	D	5370	D	5340	D	5300	C	5250	C	5300	C	5300	C
605NBGP0012	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	4630	C	4630	C	4610	C	4610	C	4640	C	4510	B	4540	B	4500	B	4490	B	4420	B	4480	B	4480	B
605NBGP0013	Lower Azusa/Los Angeles on-ramp	Live Oak off-ramp	4920	C	4920	C	4910	C	4910	C	4930	C	4790	C	4830	C	4790	C	4780	C	4710	C	4770	C	4770	C
605NBGP0014	Live Oak off-ramp	EB Arrow on-ramp	4180	B	4180	B	4160	B	4150	B	4180	B	4040	B	4080	B	4050	B	4020	B	3950	B	4010	B	4010	B
605NBGP0015	EB Arrow on-ramp	WB Arrow on-ramp	4360	B	4360	B	4340	B	4330	B	4360	B	4220	B	4250	B	4230	B	4200	B	4130	B	4190	B	4190	B
605NBGP0016	WB Arrow on-ramp	EB I-210 off-ramp	4590	C	4600	C	4580	C	4560	B	4590	C	4470	B	4500	B	4480	B	4460	B	4390	B	4450	B	4450	B
605NBGP0017	EB I-210 off-ramp	Huntington off-ramp	2700	B	2700	B	2650	B	2640	B	2700	B	2560	B	2570	B	2550	B	2440	B	2480	B	2460	B	2460	B
605NBGP0018	Huntington off-ramp	North of Huntington off-ramp	2170	B	2180	B	2120	B	2110	B	2170	B	2030	B	2050	B	2020	B	1920	B	1950	B	1940	B	1940	B

NOTES:
Volume is reported in *mean* vehicles per hour (vph) for traffic demand
Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-63
Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Northbound I-605
SR 710 North Study, Los Angeles County, California

Northbound Interstate 605 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605NBGP0001	South of SR 60 off-ramp	SR 60 off-ramp	9860	D	9860	D	9830	D	9810	D	9850	D	9860	D	9850	D	9910	D	9890	D	9940	D	9890	D	9890	D
605NBGP0002	SR 60 off-ramp	EB SR 60 on-ramp	6730	F	6710	F	6720	F	6720	F	6720	F	6750	F	6720	F	6840	F	6790	F	6810	F	6760	F	6760	F
605NBGP0003	EB SR 60 on-ramp	WB SR 60 on-ramp	8250	E	8240	E	8250	E	8230	E	8230	E	8270	E	8230	E	8330	E	8260	E	8310	E	8250	E	8250	E
605NBGP0004	WB SR 60 on-ramp	Valley off-ramp	9140	F	9130	F	9090	F	9060	F	9090	F	9100	F	9060	F	9160	F	9100	F	9150	F	9080	F	9080	F
605NBGP0005	Valley off-ramp	EB Valley on-ramp	8040	E	8030	E	8050	E	8020	E	8060	E	8070	E	8030	E	8010	E	8030	E	8040	E	8020	E	8020	E
605NBGP0006	EB Valley on-ramp	WB Valley on-ramp	8130	E	8120	E	8140	E	8110	E	8160	E	8160	E	8120	E	8110	E	8120	E	8130	E	8120	E	8120	E
605NBGP0007	WB Valley on-ramp	I-10 off-ramp	8880	F	8870	F	8890	F	8880	F	8910	F	8910	F	8870	F	8850	F	8840	F	8850	F	8840	F	8840	F
605NBGP0008	I-10 off-ramp	I-10 on-ramp	5170	D	5160	D	5160	D	5130	D	5220	D	5190	D	5170	D	5130	D	4960	D	4970	D	5060	D	5060	D
605NBGP0009	I-10 on-ramp	Ramona off-ramp	7520	D	7520	D	7480	D	7480	D	7500	D	7420	D	7470	D	7450	D	7270	C	7260	C	7340	D	7340	D
605NBGP0010	Ramona off-ramp	Ramona on-ramp	6650	D	6650	D	6610	D	6610	D	6630	D	6550	D	6590	D	6550	D	6370	C	6370	C	6440	D	6440	D
605NBGP0011	Ramona on-ramp	Lower Azusa/Los Angeles off-ramp	7080	E	7080	E	7050	E	7040	E	7060	E	6990	E	7020	E	6980	E	6780	D	6760	D	6860	D	6860	D
605NBGP0012	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	6080	C	6080	C	6050	C	6040	C	6040	C	5980	C	6000	C	5970	C	5770	C	5750	C	5850	C	5850	C
605NBGP0013	Lower Azusa/Los Angeles on-ramp	Live Oak off-ramp	6330	D	6320	D	6290	D	6280	D	6290	D	6220	D	6240	D	6220	D	6010	D	5990	D	6090	D	6090	D
605NBGP0014	Live Oak off-ramp	EB Arrow on-ramp	5350	C	5350	C	5310	C	5310	C	5320	C	5250	C	5270	C	5240	C	5020	C	5000	C	5100	C	5100	C
605NBGP0015	EB Arrow on-ramp	WB Arrow on-ramp	5470	C	5460	C	5430	C	5430	C	5440	C	5370	C	5390	C	5370	C	5130	C	5120	C	5230	C	5230	C
605NBGP0016	WB Arrow on-ramp	EB I-210 off-ramp	5650	C	5650	C	5600	C	5600	C	5620	C	5550	C	5570	C	5540	C	5320	C	5300	C	5420	C	5420	C
605NBGP0017	EB I-210 off-ramp	Huntington off-ramp	2700	B	2710	B	2610	B	2650	B	2630	B	2620	B	2620	B	2580	B	2380	B	2330	B	2450	B	2450	B
605NBGP0018	Huntington off-ramp	North of Huntington off-ramp	2030	B	2040	B	1980	B	1980	B	2000	B	1930	B	1950	B	1900	B	1690	B	1670	B	1780	B	1780	B

NOTES:
Volume is reported in *mean* vehicles per hour (vph) for traffic demand
Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-64

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Southbound I-605
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 605 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605SBGP0001	North of Huntington on-ramp	Huntington on-ramp	3650	D	3660	D	3700	D	3660	D	3690	D	3710	D	3690	D	3690	D	3690	D	3680	D	3690	D	3690	D
605SBGP0002	Huntington on-ramp	EB I-210 on-ramp	3900	C	3910	C	3880	C	3890	C	3960	C	3940	C	3950	C	3970	C	3960	C	3960	C	3960	C	3960	C
605SBGP0003	EB I-210 on-ramp	Arrow off-ramp	6790	D	6800	D	6770	D	6770	D	6810	D	6700	D	6720	D	6710	D	6580	D	6550	D	6630	D	6630	D
605SBGP0004	Arrow off-ramp	Live Oak on-ramp	6200	C	6200	C	6180	C	6180	C	6220	C	6120	C	6140	C	6130	C	6000	C	5970	C	6050	C	6050	C
605SBGP0005	Live Oak on-ramp	Lower Azusa/Los Angeles off-ramp	7700	E	7700	E	7690	E	7700	E	7720	E	7630	E	7630	E	7620	E	7490	E	7480	E	7530	E	7530	E
605SBGP0006	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	7080	D	7080	D	7060	D	7070	D	7090	D	7000	D	7000	D	7000	D	6870	D	6860	D	6910	D	6910	D
605SBGP0007	Lower Azusa/Los Angeles on-ramp	Ramona off-ramp	8540	F	8540	F	8520	F	8540	F	8560	F	8460	F	8480	F	8480	F	8340	F	8330	F	8400	F	8400	F
605SBGP0008	Ramona off-ramp	Ramona on-ramp	7950	E	7950	E	7930	E	7950	E	7980	E	7880	E	7890	E	7890	E	7760	E	7760	E	7810	E	7810	E
605SBGP0009	Ramona on-ramp	I-10 off-ramp	9250	F	9250	F	9230	F	9250	F	9270	F	9190	F	9200	F	9180	F	9070	F	9080	F	9130	F	9130	F
605SBGP0010	I-10 off-ramp	I-10 on-ramp	5300	C	5290	C	5180	C	5190	C	5180	C	5200	C	5150	C	5140	C	5120	C	5120	C	5110	C	5110	C
605SBGP0011	I-10 on-ramp	Valley off-ramp	8580	F	8580	F	8560	F	8540	F	8520	F	8530	F	8520	F	8470	F	8490	F	8500	F	8470	F	8470	F
605SBGP0012	Valley off-ramp	Valley on-ramp	7790	E	7790	E	7760	E	7740	E	7720	E	7730	E	7720	E	7680	E	7710	E	7720	E	7690	E	7690	E
605SBGP0013	Valley on-ramp	SR 60 off-ramp	9030	F	9020	F	8990	F	8980	F	8950	F	8970	F	8940	F	8910	F	8940	F	8950	F	8920	F	8920	F
605SBGP0014	SR 60 off-ramp	WB SR 60 on-ramp	6130	E	6120	E	6010	E	6040	E	6100	E	6110	E	6060	E	6070	E	6080	E	6070	E	6060	E	6060	E
605SBGP0015	WB SR 60 on-ramp	EB SR 60 on-ramp	8720	F	8720	F	8660	E	8730	F	8750	F	8750	F	8710	F	8730	F	8730	F	8740	F	8730	F	8730	F
605SBGP0016	EB SR 60 on-ramp	South of EB SR 60 on-ramp	9690	D	9690	D	9640	D	9690	D	9680	D	9680	D	9660	D	9660	D	9650	D	9670	D	9680	D	9680	D

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-65

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Southbound I-605
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 605 - PM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605SBGP0001	North of Huntington on-ramp	Huntington on-ramp	2580	C	2580	C	2570	C	2570	C	2580	C	2590	C	2600	C	2600	C	2640	C	2620	C	2620	C	2620	C
605SBGP0002	Huntington on-ramp	EB I-210 on-ramp	2700	B	2700	B	2690	B	2680	B	2700	B	2710	B	2720	B	2720	B	2760	B	2740	B	2740	B	2740	B
605SBGP0003	EB I-210 on-ramp	Arrow off-ramp	5810	D	5810	D	5750	D	5740	D	5780	D	5690	D	5690	D	5680	D	5590	D	5590	D	5610	D	5610	D
605SBGP0004	Arrow off-ramp	Live Oak on-ramp	4910	C	4910	C	4860	C	4850	C	4880	C	4790	C	4790	C	4780	C	4680	C	4680	C	4700	C	4700	C
605SBGP0005	Live Oak on-ramp	Lower Azusa/Los Angeles off-ramp	6370	D	6370	D	6320	D	6320	D	6350	D	6270	D	6270	D	6250	D	6170	D	6170	D	6180	D	6180	D
605SBGP0006	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	5650	C	5650	C	5610	C	5600	C	5630	C	5550	C	5550	C	5530	C	5450	C	5450	C	5450	C	5450	C
605SBGP0007	Lower Azusa/Los Angeles on-ramp	Ramona off-ramp	6810	D	6800	D	6750	D	6750	D	6780	D	6700	D	6690	D	6680	D	6590	D	6590	D	6600	D	6600	D
605SBGP0008	Ramona off-ramp	Ramona on-ramp	6100	C	6100	C	6040	C	6040	C	6070	C	5990	C	5980	C	5970	C	5890	C	5890	C	5900	C	5900	C
605SBGP0009	Ramona on-ramp	I-10 off-ramp	6750	C	6750	C	6690	C	6690	C	6720	C	6630	C	6640	C	6620	C	6540	C	6540	C	6550	C	6550	C
605SBGP0010	I-10 off-ramp	I-10 on-ramp	4160	B	4150	B	4150	B	4160	B	4170	B	4160	B	4150	B	4130	B	4100	B	4110	B	4120	B	4120	B
605SBGP0011	I-10 on-ramp	Valley off-ramp	7640	F	7640	F	7630	F	7660	F	7660	F	7660	F	7620	F	7630	F	7640	F	7650	F	7650	F	7650	F
605SBGP0012	Valley off-ramp	Valley on-ramp	6690	D	6680	D	6680	D	6690	D	6690	D	6690	D	6650	D	6670	D	6670	D	6690	D	6680	D	6680	D
605SBGP0013	Valley on-ramp	SR 60 off-ramp	7420	D	7410	D	7420	D	7430	D	7420	D	7430	D	7390	D	7410	D	7420	D	7430	D	7420	D	7420	D
605SBGP0014	SR 60 off-ramp	WB SR 60 on-ramp	4830	D	4820	D	4840	D	4830	D	4830	D	4850	D	4830	D	4830	D	4820	D	4810	D	4820	D	4820	D
605SBGP0015	WB SR 60 on-ramp	EB SR 60 on-ramp	7350	D	7340	D	7360	D	7350	D	7360	D	7380	D	7360	D	7370	D	7350	D	7340	D	7360	D	7360	D
605SBGP0016	EB SR 60 on-ramp	South of EB SR 60 on-ramp	8310	C	8290	C	8310	C	8330	C	8320	C	8310	C	8300	C	8290	C	8300	C	8300	C	8320	C	8320	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-66

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Northbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 710/State Route 710 - AM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
Segment ID	From	To											Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
710NBGP0001	South of NB I-5 off-ramp	NB I-5 off-ramp	10,470	E	10,560	E	10,470	E	10,470	E	10,570	E	10,620	E	10,620	E	10,580	E	10,650	E	10,650	E	10,660	E
710NBGP0002	NB I-5 off-ramp	Olympic off-ramp	7050	F	7130	F	7020	F	7020	F	7070	F	7100	F	7170	F	7100	F	7150	F	7150	F	7130	F
710NBGP0003	Olympic off-ramp	NB I-5 on-ramp	6260	E	6320	E	6230	E	6210	E	6260	E	6240	E	6320	E	6230	E	6250	E	6270	E	6230	E
710NBGP0004	NB I-5 on-ramp	Olympic on-ramp	7550	D	7590	D	7520	D	7520	D	7570	D	7730	D	8210	E	8170	E	7780	E	8250	E	8210	E
710NBGP0005	Olympic on-ramp	SR 60 off-ramp	7970	F	8010	F	7940	F	7930	F	7980	F	8100	F	8550	F	8490	F	8160	F	8610	F	8570	F
710NBGP0006	SR 60 off-ramp	Third off-ramp	5070	C	5090	C	5110	C	5140	C	5120	C	5410	C	5490	C	5450	C	5600	C	5710	C	5650	C
710NBGP0007	Third off-ramp	Third on-ramp	4910	D	4930	D	4950	D	5010	D	4950	D	5320	D	5400	D	5390	D	5570	D	5650	D	5580	D
710NBGP0008	Third on-ramp	Cesar Chavez off-ramp	5010	D	5030	D	5080	D	5140	D	5040	D	5410	D	5570	D	5520	D	5640	E	5790	E	5730	E
710NBGP0009	Cesar Chavez off-ramp	SR 60 on-ramp	4340	C	4360	C	4470	C	4550	C	4410	C	4820	D	4890	D	4850	D	5070	D	5150	D	5090	D
710NBGP0010	SR 60 on-ramp	Cesar Chavez on-ramp	7000	D	7010	D	7310	D	7340	D	7140	D	7590	D	7780	E	7700	D	7710	D	7970	E	7870	E
710NBGP0011	Cesar Chavez on-ramp	Ramona off-ramp	7510	F	7500	F	7850	F	7880	F	7620	F	8160	F	8180	F	8090	F	8250	F	8330	F	8240	F
710NBGP0012	Ramona off-ramp	I-10 off-ramp	6770	F	6780	F	7160	F	7200	F	6910	F	7350	F	7430	F	7340	F	7560	F	7840	F	7770	F
710NBGP0013	I-10 off-ramp	EB I-10 on-ramp	2210	B	2220	B	3060	C	3060	C	2420	C	3750	D	3710	D	3680	D	4820	F	4820	F	4810	F
710NBGP0014	EB I-10 on-ramp	Busway on-ramp	2410	B	2420	B	3280	B	3290	B	2630	B	4000	C	3960	C	3910	C	5740	D	5710	D	5520	D
710NBGP0015	Busway on-ramp	WB I-10 on-ramp	2490	B	2500	B	3360	C	3370	C	2710	B	4030	C	3990	C	3940	C	5810	D	5800	D	5600	D
710NBGP0016	WB I-10 on-ramp	North of WB I-10 on-ramp	2600	B	2610	B	3490	C	3490	C	2850	B												
710NBGP0015	Busway on-ramp	WB I-10 on-ramp										4030	C	3990	C	3940	C	5810	D	5800	D	5600	D	
710NBGP0015	Busway on-ramp	WB I-10 on-ramp										4110	D	4090	C	4010	C	3770	C	3840	C	3600	C	
710NBGP0015	Busway on-ramp	WB I-10 on-ramp										3090	C	3070	C	2950	C	3030	C	3050	C	2810	C	
710NBGP0015	Busway on-ramp	WB I-10 on-ramp										2440	C	2410	C	2330	C	1920	C	1960	B	1750	B	
710NBGP0015	Busway on-ramp	WB I-10 on-ramp										2260	C	2210	C	2170	C	1260	A	1230	A	1170	A	
210WBG00038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp										1780	B	1730	B	1690	B	2830	C	2730	C	2700	C	
210WBG00039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp										2650	B	2580	B	2540	B	3640	C	3520	B	3500	B	
710NBGP00201	Northbound I-710 Tunnel 2	Northbound I-710 Tunnel 2																2540	C	2450	C	2430	C	

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-67

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Northbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 710/State Route 710 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
Segment ID	From	To																						
710NBGP0001	South of NB I-5 off-ramp	NB I-5 off-ramp	8960	D	9050	D	8990	D	8980	D	9070	D	9100	D	9120	D	9090	D	9170	D	9200	D	9180	D
710NBGP0002	NB I-5 off-ramp	Olympic off-ramp	6800	F	6880	F	6810	F	6810	F	6910	F	6930	F	6940	F	6920	F	6960	F	7000	F	6960	F
710NBGP0003	Olympic off-ramp	NB I-5 on-ramp	6010	E	6060	E	6000	E	6000	E	6090	E	6080	E	6100	E	6070	E	6050	E	6090	E	6040	E
710NBGP0004	NB I-5 on-ramp	Olympic on-ramp	7480	D	7510	D	7510	D	7510	D	7550	D	7650	D	7970	E	7880	E	7820	E	8080	E	8010	E
710NBGP0005	Olympic on-ramp	SR 60 off-ramp	7890	F	7910	F	7920	F	7910	F	7950	F	8040	F	8350	F	8270	F	8250	F	8460	F	8400	F
710NBGP0006	SR 60 off-ramp	Third off-ramp	4550	C	4560	C	4640	C	4600	C	4610	C	4830	C	4940	C	4870	C	5010	C	5110	C	5010	C
710NBGP0007	Third off-ramp	Third on-ramp	4380	C	4390	C	4490	C	4450	C	4450	C	4670	C	4810	D	4730	C	4860	D	4980	D	4880	D
710NBGP0008	Third on-ramp	Cesar Chavez off-ramp	4480	D	4480	D	4590	D	4550	D	4540	D	4850	D	4930	D	4870	D	5020	D	5100	D	5000	D
710NBGP0009	Cesar Chavez off-ramp	SR 60 on-ramp	3800	C	3810	C	3900	C	3870	C	3880	C	4160	C	4230	C	4150	C	4340	C	4450	C	4340	C
710NBGP0010	SR 60 on-ramp	Cesar Chavez on-ramp	4890	C	4900	C	5090	C	5060	C	4960	C	5360	C	5510	C	5410	C	5690	C	5810	C	5710	C
710NBGP0011	Cesar Chavez on-ramp	Ramona off-ramp	5180	E	5190	E	5420	E	5390	E	5260	E	5700	E	5840	E	5750	E	6000	E	6140	E	6020	E
710NBGP0012	Ramona off-ramp	I-10 off-ramp	4640	C	4650	C	4960	D	4930	D	4810	D	5240	D	5460	D	5370	D	5690	D	5930	E	5810	D
710NBGP0013	I-10 off-ramp	EB I-10 on-ramp	1400	A	1410	A	2210	B	2220	B	1640	B	2720	C	2840	C	2790	C	4160	E	4310	E	3950	E
710NBGP0014	EB I-10 on-ramp	Busway on-ramp	1630	A	1640	A	2480	B	2470	B	1870	A	3540	C	3530	C	3480	B	5910	E	6050	E	5780	D
710NBGP0015	Busway on-ramp	WB I-10 on-ramp	1720	B	1730	B	2580	B	2570	B	1960	B	3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0016	WB I-10 on-ramp	North of WB I-10 on-ramp	1840	B	1850	B	2710	B	2700	B	2110	B												
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10 on-ramp											3640	C	3600	C	3560	C	6060	E	6140	E	5860	E
710NBGP0015	Busway on-ramp	WB I-10																						

TABLE 5-68

Opening Year (2020 and 2025 AM) Freeway Operations Analysis Summary – Southbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 710/State Route 710 - AM Peak Hour Analysis																										
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
Segment ID	From	To																								
710SBGP0001	North of EB I-10 off-ramp	EB I-10 off-ramp	2620	C	2620	C	4750	D	4780	D	3070	C														
710SBGP0002	EB I-10 off-ramp	WB I-10 off-ramp	2460	B	2460	B	4540	C	4550	C	2900	B														
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp	2160	B	2160	B	3970	E	4000	E	2610	C	3370	D	3320	D	3190	D	5850	C	5860	C	5680	C		
710SBGP0004	WB I-10 on-ramp	EB I-10/Ramona on-ramp	3860	C	3860	C	4700	D	4730	D	4120	C	5110	D	5320	D	5260	D	6730	C	6780	C	6750	C		
710SBGP0005	EB I-10/Ramona on-ramp	Cesar Chavez off-ramp	5640	E	5650	E	6110	E	6230	F	5860	E	6420	F	6610	F	6540	F	7030	F	7230	F	7080	F		
710SBGP0006	Cesar Chavez off-ramp	SR 60 off-ramp	5290	D	5300	D	5730	E	5840	E	5500	D	5950	E	6110	E	6050	E	6460	E	6640	F	6500	F		
710SBGP0007	SR 60 off-ramp	Cesar Chavez on-ramp	4080	C	4090	C	4770	D	4680	D	4260	C	4450	C	4680	D	4650	C	5080	D	5270	D	5200	D		
710SBGP0008	Cesar Chavez on-ramp	Third on-ramp	4600	C	4610	C	5240	D	5190	D	4780	D	4950	D	5130	D	5140	D	5480	D	5670	D	5590	D		
710SBGP0009	Third on-ramp	Third off-ramp	4720	D	4730	D	5330	E	5250	E	4880	D	5040	D	5190	D	5170	D	5510	E	5710	E	5620	E		
710SBGP0010	Third off-ramp	SR 60 on-ramp	4590	C	4600	C	5180	D	5080	D	4740	D	4900	D	5050	D	5020	D	5420	D	5610	D	5530	D		
710SBGP0011	SR 60 on-ramp	Whittier/Olympic off-ramp	7640	F	7660	F	7730	F	7860	F	7750	F	7840	F	8070	F	8060	F	8000	F	8250	F	8160	F		
710SBGP0012	Whittier/Olympic off-ramp	SB I-5 off-ramp	7110	D	7130	D	7180	D	7320	D	7190	D	7220	D	7490	D	7480	D	7390	D	7640	E	7560	D		
710SBGP0013	SB I-5 off-ramp	Whittier/Olympic on-ramp	5410	D	5430	D	5460	D	5540	D	5470	D	5490	D	5740	E	5770	E	5580	D	5790	E	5740	E		
710SBGP0014	Whittier/Olympic on-ramp	SB I-5 on-ramp	5950	E	5980	E	6020	E	6060	E	6020	E	6040	E	6480	F	6460	F	6190	F	6560	F	6520	F		
710SBGP0015	SB I-5 on-ramp	South of SB I-5 on-ramp	7730	C	7780	C	7710	C	7750	C	7800	D	7890	D	8440	D	8440	D	7990	D	8490	D	8470	D		
210EBGP0049	Colorado off-ramp	SR 134/I-210 on-ramp											1460	B	1910	B	1830	B								
710SBGPT1004	SR 134/I-210 on-ramp	Valley Blvd on-ramp											2570	C	2540	C	2410	C								
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp											3490	C	3460	C	3280	C								
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp											3440	D	3400	D	3230	D								
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp											3370	D	3320	D	3190	D								
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp													3480	D	3540	D	3200	C						
710SBGPT1002	WB SR134 on-ramp	EB SR134 on-ramp													1420	B	1470	B	1250	B						
710SBGPT1003	EB SR134 on-ramp	Green Street on-ramp													2190	B	2270	C	1890	B						
710SBGPT1004	Green Street on-ramp	Valley Blvd on-ramp													3420	D	3430	D	3080	C						
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp													4270	C	4240	D	3900	C						
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp													3610	E	3530	D	3420	D						
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp													5850	C	5860	C	5680	C						
710SBGPT2001	Southbound I-710 Tunnel 2	Southbound I-710 Tunnel 2													3000	C	3020	C	2800	C						

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-69

Opening Year (2020 and 2025 PM) Freeway Operations Analysis Summary – Southbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 710/State Route 710 - PM Peak Hour Analysis																								
Freeway Segment			2020 No Build Alternative		2025 No Build Alternative		2020 TSM/TDM Alternative		2020 BRT Alternative		2025 LRT Alternative		2025 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)	Single Bore (Toll-No Truck)	Single Bore (Toll-Express Bus)	Dual Bore (No Toll)	Dual Bore (No Toll-No Trucks)	Dual Bore (Toll)						
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS						
710SBGP0001	North of EB I-10 off-ramp	EB I-10 off-ramp	3370	C	3370	C	5110	D	5120	D	3810	C												
710SBGP0002	EB I-10 off-ramp	WB I-10 off-ramp	3260	B	3270	B	4970	D	4970	D	3700	C												
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp	3040	C	3050	C	4630	F	4620	F	3490	D	3300	D	3320	D	3190	D	5600	C	5650	C	5470	C
710SBGP0004	WB I-10 on-ramp	EB I-10/Ramona on-ramp	5170	D	5190	D	5950	E	5950	E	5390	D	5350	D	5410	D	5330	D	6850	C	7010	C	6930	C
710SBGP0005	EB I-10/Ramona on-ramp	Cesar Chavez off-ramp	7400	F	7440	F	7800	F	7800	F	7570	F	7940	F	8180	F	8070	F	8130	F	8520	F	8520	F
710SBGP0006	Cesar Chavez off-ramp	SR 60 off-ramp	6930	F	6970	F	7310	F	7310	F	7100	F	7370	F	7590	F	7490	F	7520	F	7970	F	7910	F
710SBGP0007	SR 60 off-ramp	Cesar Chavez on-ramp	5350	D	5390	D	5560	D	5560	D	5490	D	6020	E	6430	E	6340	E	6580	F	6890	F	6840	F
710SBGP0008	Cesar Chavez on-ramp	Third on-ramp	6060	E	6100	E	6260	F	6260	F	6180	F	6650	F	7060	F	6970	F	7100	F	7470	F	7410	F
710SBGP0009	Third on-ramp	Third off-ramp	6200	F	6240	F	6370	F	6380	F	6310	F	6710	F	7090	F	7010	F	7110	E	7490	F	7420	F
710SBGP0010	Third off-ramp	SR 60 on-ramp	6020	E	6060	E	6170	E	6190	E	6130	E	6510	F	6880	F	6800	F	6940	F	7310	F	7240	F
710SBGP0011	SR 60 on-ramp	Whittier/Olympic off-ramp	9990	F	10,040	F	10,110	F	10,100	F	10,050	F	10,210	F	10,720	F	10,700	F	10,330	F	10,810	F	10,780	F
710SBGP0012	Whittier/Olympic off-ramp	SB I-5 off-ramp	9310	F	9360	F	9380	F	9380	F	9370	F	9450	F	9970	F	9960	F	9500	F	9980	F	9970	F
710SBGP0013	SB I-5 off-ramp	Whittier/Olympic on-ramp	7090	F	7150	F	7140	F	7110	F	7160	F	7210	F	7800	F	7770	F	7220	F	7760	F	7760	F
710SBGP0014	Whittier/Olympic on-ramp	SB I-5 on-ramp	7910	F	7980	F	7980	F	7950	F	8010	F	8080	F	8790	F	8750	F	8120	F	8790	F	8790	F
710SBGP0015	SB I-5 on-ramp	South of SB I-5 on-ramp	10,280	E	10,380	E	10,310	E	10,330	E	10,390	E	10,490	E	11,460	F	11,420	F	10,500	E	11,470	F	11,470	F
210EBGP0049	Colorado off-ramp	SR 134/I-210 on-ramp											1950	B	1940	B	1860	B						
710SBGPT1004	SR 134/I-210 on-ramp	Valley Blvd on-ramp											2680	C	2690	C	2530	C						
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp											3420	C	3430	C	3280	C						
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp											3350	D	3360	D	3220	D						
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp											3300	D	3320	D	3190	D						
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp																	2880	C	2930	C	2700	C
710SBGPT1002	WB SR134 on-ramp	EB SR134 on-ramp																	840	A	840	A	710	A
710SBGPT1003	EB SR134 on-ramp	Green Street on-ramp																	1610	B	1650	B	1440	B
710SBGPT1004	Green Street on-ramp	Valley Blvd on-ramp																	3060	C	3060	C	2860	C
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp																	3730	D	3740	D	3550	C
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp																	3390	D	3380	D	3300	D
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp																	5600	C	5650	C	5470	C
710SBGPT2001	Southbound I-710 Tunnel 2	Southbound I-710 Tunnel 2																	2620	C	2660	C	2490	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-70

Opening Year (2020/2025) Volume/Capacity Ratio in I-10 Express Lanes*SR 710 North Study, Los Angeles County, California*

Alternatives/Variations	Eastbound		Westbound	
	AM	PM	AM	PM
2020 No Build	0.04 - 0.09	0.25 - 0.31	0.30 - 0.42	0.09 - 0.16
2020 TSM/TDM	0.04 - 0.09	0.25 - 0.31	0.30 - 0.43	0.09 - 0.16
2020 BRT	0.04 - 0.09	0.25 - 0.31	0.30 - 0.43	0.09 - 0.16
2025 No Build	0.04 - 0.11	0.25 - 0.31	0.30 - 0.44	0.10 - 0.17
2025 LRT	0.04 - 0.11	0.25 - 0.31	0.30 - 0.45	0.10 - 0.17
2025 Single Bore (Toll)	0.04 - 0.10	0.25 - 0.31	0.30 - 0.45	0.10 - 0.17
2025 Single Bore (Toll - No Trucks)	0.03 - 0.10	0.25 - 0.32	0.30 - 0.45	0.10 - 0.17
2025 Single Bore (Toll - Express Bus)	0.03 - 0.10	0.25 - 0.31	0.31 - 0.45	0.10 - 0.17
2025 Dual Bore (No Toll)	0.06 - 0.10	0.26 - 0.32	0.32 - 0.47	0.12 - 0.20
2025 Dual Bore (No Toll - No Trucks)	0.05 - 0.10	0.26 - 0.32	0.32 - 0.47	0.12 - 0.20
2025 Dual Bore (Toll)	0.04 - 0.10	0.26 - 0.32	0.31 - 0.46	0.11 - 0.19

TABLE 5-71

Opening Year (2020/2025) Intersection Operations Summary
 SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	2025 Freeway Tunnel Alternative																																											
			2020 No Build Alternative				2025 No Build Alternative				2020 TSM/TDM Alternative				2020 BRT Alternative				2025 LRT Alternative				Single Bore (Toll)				Single Bore (Toll-No Trucks)				Single Bore (Toll-Express Bus)				Dual Bore (No Toll)				Dual Bore (No Toll-No Trucks)				Dual Bore (Toll)			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM					
Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS									
1	Atlantic Boulevard / Glendon Way	Signal	64.1	E	19.2	B	70.3	E	20.4	C	10.7	B	8.3	A	10.7	B	8.3	A	12.0	B	9.3	A	11.3	B	9.1	A	11.0	B	8.7	A	11.2	B	9.0	A	11.2	B	8.7	A	11.1	B	8.7	A	11.2	B	8.7	A
2	Atlantic Boulevard / Main Street	Signal	39.7	D	44.2	D	41.0	D	44.8	D	41.7	D	51.6	D	42.0	D	47.6	D	42.9	D	48.4	D	36.2	D	38.1	D	34.1	C	36.5	D	35.7	D	37.5	D	33.5	C	35.2	D	33.4	C	34.9	C	33.5	C	35.2	D
3	Atlantic Boulevard / Mission Road	Signal	36.7	D	67.1	E	38.0	D	65.8	E	42.1	D	85.8	F	42.5	D	88.7	F	41.0	D	69.1	E	35.2	D	60.8	E	33.1	C	58.8	E	34.3	C	61.0	E	35.8	D	57.8	E	34.7	C	57.0	E	35.8	D	57.8	E
4	Atlantic Boulevard / Valley Boulevard	Signal	43.8	D	57.8	E	46.7	D	58.1	E	44.0	D	53.2	D	44.1	D	53.8	D	51.1	D	57.9	E	47.7	D	58.3	E	45.0	D	55.0	D	46.9	D	58.0	E	45.7	D	54.6	E	45.2	D	53.7	D	45.7	D	54.6	D
5	Fremont Avenue / Commonwealth Avenue	Signal	20.7	C	30.0	C	21.1	C	31.1	C	24.2	C	36.3	D	24.0	C	35.7	D	20.4	C	29.2	C	17.4	B	23.6	C	17.0	B	22.9	C	17.1	B	23.4	C	16.2	B	21.5	C	16.2	B	21.3	C	16.2	B	21.5	C
6	Fremont Avenue / Concord Avenue	Signal	11.4	B	13.2	B	11.8	B	13.3	B	14.5	B	19.0	B	15.3	B	18.8	B	11.6	B	13.6	B	10.4	B	12.7	B	10.1	B	12.2	B	10.3	B	12.3	B	8.5	A	11.7	B	9.5	A	11.6	B	8.5	A	11.7	B
7	Fremont Avenue / Hellman Avenue	Signal	36.7	D	40.8	D	39.7	D	43.2	D	23.9	C	29.2	C	24.0	C	29.0	C	28.2	C	34.4	C	31.1	C	36.1	D	29.8	C	34.6	C	30.6	C	34.1	C	29.6	C	34.0	C	29.1	C	34.4	C	29.6	C	34.0	C
8	Fremont Avenue / Main Street	Signal	27.3	C	33.8	C	27.3	C	35.1	D	29.6	C	35.9	D	30.1	C	36.1	D	27.6	C	36.0	D	24.4	C	26.7	C	24.1	C	25.9	C	24.2	C	26.0	C	22.9	C	23.3	C	22.8	C	23.1	C	22.9	C	23.3	C
9	Fremont Avenue / Mission Road	Signal	47.5	D	65.6	E	49.1	D	65.2	E	111.9	F	116.6	F	111.6	F	110.2	F	66.9	E	89.1	F	49.1	D	68.1	E	46.2	D	67.7	E	46.6	D	66.9	E	41.4	D	59.0	E	40.4	D	58.4	E	41.4	D	59.0	E
10	Fremont Avenue / Norwood Avenue	TWSC	51.4	F	OVF	F	58.2	F	OVF	F	33.5	D	OVF	F	33.9	D	452.9	F	54.9	F	OVF	F	89.4	F	OVF	F	75.3	F	OVF	F	97.5	F	OVF	F	76.7	F	OVF	F	71.6	F	OVF	F	76.7	F	OVF	F
11	Fremont Avenue / Poplar Boulevard	Signal	10.6	B	8.9	A	10.5	B	8.9	A	13.0	B	10.6	B	10.3	B	10.7	B	10.8	B	9.0	A	9.8	A	9.5	A	9.5	A	9.3	A	9.6	A	9.4	A	8.9	A	8.8	A	8.9	A	8.7	A	8.9	A	8.8	A
12	Fremont Avenue / Valley Boulevard	Signal	45.5	D	47.9	D	45.3	D	48.8	D	37.6	D	38.4	D	36.8	D	38.5	D	46.0	D	49.1	D	48.1	D	47.2	D	43.0	D	46.0	D	46.0	D	47.1	D	38.5	D	41.1	D	41.5	D	39.5	D	38.5	D	41.1	D
13	Garfield Avenue / Glendon Way	Signal	17.5	B	15.7	B	18.1	B	16.4	B	9.8	A	7.5	A	9.7	A	7.4	A	10.4	B	8.4	A	10.5	B	8.1	A	10.4	B	8.1	A	10.4	B	8.1	A	10.3	B	9.4	A	10.3	B	9.3	A	10.3	B	9.4	A
14	Garfield Avenue / Main Street	Signal	30.9	C	52.3	D	30.8	C	52.3	D	31.2	C	56.5	E	31.1	C	56.9	E	31.4	C	49.0	D	30.2	C	42.0	D	29.9	C	40.9	D	30.3	C	41.6	D	29.5	C	39.1	D	29.6	C	38.4	D	29.5	C	39.1	D
15	Garfield Avenue / Mission Road	Signal	49.2	D	65.1	E	53.2	D	67.8	E	44.1	D	57.7	E	43.2	D	58.6	E	45.5	D	56.2	E	39.9	D	50.2	D	39.0	D	50.0	D	38.9	D	49.3	D	38.1	D	47.8	D	37.0	D	47.2	D	38.1	D	47.8	D
16	Garfield Avenue / Norwood Place	TWSC	10.5	B	9.3	A	10.6	B	9.4	A	24.9	C	20.1	C	22.6	C	20.3	C	33.5	D	21.3	C	25.5	D	21.3	C	25.5	D	21.3	C	25.2	D	21.3	C	31.4	D	20.6	C	31.4	D	20.5	C	31.4	D	20.6	C
17	Garfield Avenue / Valley Boulevard	Signal	40.6	D	49.3	D	42.1	D	50.5	D	39.3	D	48.1	D	38.6	D	47.8	D	44.0	D	54.7	D	39.7	D	49.6	D	40.0	D	49.1	D	39.8	D	49.3	D	35.7	D	45.9	D	35.3	D	45.7	D	35.7	D	45.9	D
18	Huntington Drive / Main Street	Signal	1.0	A	0.6	A	0.7	A	0.6	A	0.7	A	0.6	A	0.7	A	0.6	A	0.7	A	0.7	A	0.9	A	0.6	A	0.9	A	0.5	A	0.9	A	0.6	A	0.9	A	0.4	A	0.8	A	0.6	A	0.9	A	0.4	A
19	SR 710 NB Off-Ramp / Valley Boulevard	Signal	29.5	C	15.5	B	32.0	C	18.0	B	530.5	F	607.5	F	606.9	F	627.9	F	425.4	F	569.5	F	17.2	B	21.7	C	17.2	B	21.5	C	16.9	B	21.6	C	16.1	B	9.8	A	16.0	B	14.3	B	16.0	B	13.3	B
20	SR 710 SB On-Ramp / Valley Boulevard	Signal	50.6	D	89.0	F	69.5	E	158.5	F	Valley Boulevard/SR 710 ramp terminals is one intersection with these alternatives										7.4	A	5.2	A	7.5	A	4.8	A	7.6	A	5.0	A	7.2	A	6.6	A	7.2	A	5.5	A	7.2	A	5.5	A		
21	Baldwin Avenue / Foothill Boulevard	Signal	18.4	B	30.1	C	19.1	B	30.2	C	18.6	B	29.6	C	18.6	B	29.8	C	19.3	B	30.0	C	18.8	B	27.7	C	18.8	B	28.5	C	18.3	B	28.1	C	18.6	B	25.5	C	19.3	B	24.9	C	18.6	B	25.5	C
22	Baldwin Avenue / Huntington Drive	Signal	38.4	D	52.7	D	39.1	D	54.7	D	39.0	D	53.1	D	38.7	D	53.5	D	40.1	D	57.6	E	39.6	D	52.4	D	39.5	D	53.9	D	39.9	D	53.3	D	38.5	D	45.9	D	38.5	D	45.0	D	39.2	D	45.9	D
23	Santa Anita Avenue / Duarte Road	Signal	22.7	C	22.2	C	24.3	C	23.0	C	23.0	C	21.9	C	23.0	C	21.9	C	27.2	C	23.2	C	23.1	C	21.7	C	23.5	C	23.3	C	23.5	C	21.7	C	21.3	C	20.4	C	21.2	C	20.1	C	21.3	C	22.1	C
24	Santa Anita Avenue / Live Oak Avenue	Signal	31.4	C	33.3	C	31.8	C	33.6	C	31.4	C	33.0	C	31.4	C	33.1	C	32.6	C	33.7	C	31.3	C	33.1	C	31.3	C	33.2	C	31.4	C	33.2	C	31.0	C	32.1	C	30.9	C	31.8	C	30.9	C	32.1	C
25	Sunset Boulevard / Huntington Drive	Signal	57.2	E	58.2	E	58.7	E	59.2	E	58.2	E	59.3	E	58.0	E	59.6	E	61.8	E	61.2	E	59.1	E	62.9	E	58.7	E	62.4	E	59.9	E	63.1	E	56.6	E	58.4	E	55.9	E	56.9	E	56.6	E	58.4	E
26	I-605 NB Ramps / Ramona Boulevard	Signal	33.6	C	48.5	D	34.3	C	48.4	D	33.4	C	41.9	D	33.4	C	44.1	D	33.4	C	46.3	D	34.5	C	40.1	D	35.8	D	45.0	D	34.2	C	46.0	D	34.4	C	45.8	D	34.4	C	41.1	D	34.8	C	42.5	D
27	Atlantic Boulevard / Beverly Boulevard	Signal	30.3	C	47.5	D	30.7	C	47.9	D	29.9	C	47.1	D	30.2	C	46.2	D	30.9	C	47.4	D	32.1	C	49.1	D	31.0	C	48.5	D	32.2	C	49.7	D	32.5	C	49.6	D	32.4	C	49.3	D	32.5	C	49.6	D
28	Atlantic Boulevard / Pomona Boulevard	Signal	36.8	D	51.3	D	37.1	D	52.5	D	36.4	D	50.5	D	36.5	D	51.2	D	37.3	D	53.2	D	37.7	D	50.3	D	37.0	D	52.0	D	37.7	D	50.3	D	38.2	D	52.1	D	38.3	D	52.3	D	38.2	D	52.1	D
29	Atlantic Boulevard / Whittier Boulevard	Signal	25.8	C	33.4	C	26.3	C	34.5	C	25.7	C	32.9	C	25.6	C	32.8	C	26.4	C	35.9	D	26.9	C	37.7	D	26.2	C	35.6	D	26.6	C	37.8	D	26.9	C	38.9	D	27.0	C	38.8	D	27.1	C	38.9	D
30	Campus Road / Ramona Boulevard	Signal	27.9	C	19.8	B	28.0	C	19.9	B	23.9	C	18.6	B	24.2	C	18.6	B	26.3	C	19.6	B	27.6	C	19.0	B	26.6	C	19.1	B	28.6	C	19.0	B	28.3	C	19.7	B	29.4	C	19.7	B	28.3	C	19.7	B
31	Rosemead Boulevard / California Boulevard	Signal	26.0	C	30.1	C																																								

TABLE 5-71

Opening Year (2020/2025) Intersection Operations Summary
 SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	2025 Freeway Tunnel Alternative																																											
			2020 No Build Alternative				2025 No Build Alternative				2020 TSM/TDM Alternative				2020 BRT Alternative				2025 LRT Alternative				Single Bore (Toll)				Single Bore (Toll-No Trucks)				Single Bore (Toll-Express Bus)				Dual Bore (No Toll)				Dual Bore (No Toll-No Trucks)				Dual Bore (Toll)			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM					
Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS									
51	I-210 WB Ramps / Berkshire Place	TWSC	19.1	C	11.9	B	19.3	C	12.1	B	19.3	C	12.1	B	19.3	C	12.1	B	19.5	C	12.3	B	25.2	D	15.4	C	23.8	C	15.9	C	25.2	D	14.9	B	46.9	E	19.6	C	37.3	E	16.3	C	48.2	E	19.8	C
52	I-210 WB Ramps / Foothill Boulevard	Signal	13.3	B	12.6	B	15.4	B	12.7	B	13.8	B	12.6	B	13.8	B	12.5	B	15.7	B	13.0	B	16.7	B	15.0	B	16.6	B	15.4	B	16.8	B	15.0	B	18.0	B	26.0	C	18.1	B	26.5	C	18.0	B	26.1	C
53	Ocean View Boulevard / Foothill Boulevard	Signal	23.5	C	24.0	C	23.9	C	24.7	C	23.1	C	24.0	C	23.1	C	23.9	C	24.5	C	24.4	C	24.7	C	23.9	C	25.6	C	23.8	C	24.9	C	23.7	C	25.2	C	24.2	C	25.0	C	24.4	C	25.2	C	24.2	C
54	SR 2 Ramps / Foothill Boulevard	Signal	12.4	B	20.7	C	12.2	B	20.9	C	12.6	B	21.0	C	12.7	B	21.6	C	12.3	B	22.0	C	12.0	B	21.6	C	12.0	B	20.4	C	12.0	B	20.4	C	11.8	B	22.0	C	11.9	B	20.6	C	11.9	B	22.1	C
55	Verdugo Boulevard / Foothill Boulevard	Signal	20.9	C	21.4	C	21.1	C	21.2	C	20.9	C	21.5	C	20.9	C	21.5	C	21.1	C	21.3	C	21.6	C	23.3	C	21.9	C	23.9	C	21.7	C	23.3	C	22.5	C	26.5	C	22.5	C	26.9	C	22.5	C	26.5	C
56	Avenue 20 / Broadway	Signal	19.6	B	16.5	B	19.6	B	16.7	B	23.0	C	17.5	B	22.7	C	17.0	B	22.8	C	16.8	B	23.1	C	16.4	B	23.1	C	17.0	B	23.4	C	16.4	B	22.2	C	16.7	B	22.2	C	16.6	B	22.2	C	16.7	B
57	Avenue 64 / York Boulevard	Signal	22.1	C	24.4	C	22.3	C	24.7	C	22.1	C	24.1	C	21.9	C	24.1	C	22.5	C	24.8	C	22.1	C	23.9	C	22.6	C	23.3	C	22.3	C	23.7	C	22.2	C	23.3	C	21.6	C	23.2	C	22.2	C	23.3	C
58	Broadway / Colorado Boulevard	Signal	14.7	B	124.0	F	15.2	B	132.9	F	16.1	B	143.3	F	16.1	B	139.4	F	16.7	B	147.9	F	17.6	B	161.6	F	17.6	B	157.2	F	17.6	B	161.4	F	17.4	B	158.0	F	17.6	B	161.6	F	17.4	B	158.0	F
59	Collis Avenue / Huntington Drive	Signal	38.3	D	18.6	B	44.3	D	18.8	B	20.1	C	19.7	B	19.3	B	19.9	B	19.5	B	18.7	B	18.3	B	21.1	C	18.1	B	21.0	C	18.4	B	20.9	C	17.5	B	20.7	C	17.4	B	20.5	C	17.6	B	20.7	C
60	Concord Avenue / Alhambra Avenue	TWSC	32.4	D	72.9	F	34.2	D	100.1	F	OVF	F	OVF	F	OVF	F	OVF	F	29.1	D	123.3	F	27.0	D	97.4	F	27.6	D	96.1	F	26.5	D	67.6	F	26.4	D	50.8	F	25.3	D	50.4	F	26.4	D	50.8	F
61	Daly Street / Broadway	Signal	77.5	E	36.5	D	82.4	F	37.8	D	78.6	E	35.9	D	73.4	E	34.1	C	70.8	E	36.8	D	67.2	E	35.6	D	67.0	E	34.4	C	68.2	E	35.2	D	63.6	E	32.8	C	63.1	E	32.1	C	63.6	E	32.8	C
62	Eagle Rock Boulevard / SR 2 Ramps	Signal	34.5	C	37.7	D	34.3	C	37.9	D	33.5	C	39.3	D	34.3	C	38.4	D	32.6	C	39.6	D	34.0	C	37.2	D	35.6	D	38.1	D	34.1	C	37.4	D	35.8	D	37.9	D	35.2	D	38.0	D	36.5	D	37.9	D
63	Eagle Rock Boulevard / Verdugo Road/Avenue 40	Signal	31.6	C	49.0	D	31.4	C	50.8	D	33.5	C	60.2	E	33.7	C	45.5	D	33.0	C	47.5	D	35.8	D	51.7	D	35.5	D	51.0	D	35.2	D	51.6	D	34.2	C	48.0	D	33.9	C	46.3	D	34.2	C	48.0	D
64	Eagle Rock Boulevard / York Boulevard	Signal	15.3	B	20.4	C	15.4	B	20.5	C	17.0	B	24.9	C	17.0	B	24.9	C	17.2	B	26.1	C	17.0	B	24.1	C	17.0	B	23.5	C	17.0	B	24.0	C	16.6	B	23.8	C	16.5	B	23.5	C	16.6	B	23.8	C
65	Eastern Avenue / Huntington Drive	Signal	26.7	C	122.9	F	27.6	C	138.0	F	21.2	C	35.1	D	20.8	C	35.1	D	21.2	C	40.0	D	18.1	B	32.3	C	17.8	B	31.5	C	18.0	B	32.0	C	16.8	B	28.9	C	16.6	B	28.0	C	16.5	B	28.9	C
66	Figueroa Street / Avenue 26	Signal	47.1	D	36.2	D	52.3	D	36.2	D	42.0	D	35.9	D	41.3	D	35.0	D	54.4	D	36.3	D	46.8	D	33.3	C	47.6	D	31.4	C	49.7	D	33.0	C	53.6	D	32.2	C	44.1	D	31.9	C	53.6	D	32.2	C
67	Figueroa Street / Colorado Boulevard	Signal	31.3	C	16.8	B	33.1	C	16.7	B	33.9	C	16.3	B	32.6	C	16.3	B	36.7	D	16.3	B	35.9	D	16.9	B	39.6	D	17.6	B	35.5	D	16.8	B	39.4	D	17.4	B	44.2	D	17.4	B	39.4	D	17.4	B
68	Figueroa Street / SR 134 EB Ramps	Signal	1.0	A	1.0	A	1.0	A	1.0	A	8.3	A	8.9	A	8.3	A	8.9	A	8.3	A	8.8	A	8.3	A	8.8	A	8.4	A	8.9	A	8.3	A	8.8	A	8.3	A	8.8	A	8.3	A	8.7	A	8.3	A	8.7	A
69	Figueroa Street / SR 134 WB Ramps	Signal ¹	19.5	C	40.0	E	19.9	C	38.3	E	3.2	A	3.4	A	3.1	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A
70	Figueroa Street / York Boulevard	Signal	25.7	C	24.8	C	25.6	C	25.1	C	25.5	C	25.0	C	25.6	C	24.9	C	25.5	C	24.5	C	25.8	C	24.6	C	26.9	C	24.4	C	27.1	C	24.7	C	26.3	C	24.3	C	26.5	C	23.9	C	26.3	C	23.8	C
71	Griffin Avenue / Broadway	Signal	18.0	B	19.8	B	18.2	B	20.1	C	17.8	B	22.6	C	17.6	B	22.4	C	18.0	B	23.8	C	20.8	C	24.0	C	17.7	B	22.9	C	17.5	B	23.6	C	16.8	B	23.0	C	16.9	B	24.4	C	16.8	B	23.0	C
72	Huntington Drive / Monterey Road	Signal	51.8	D	32.7	C	54.2	D	32.9	C	86.1	F	40.3	D	85.7	F	40.0	D	73.5	E	39.9	D	47.4	D	34.2	C	42.2	D	33.9	C	43.2	D	34.3	C	37.5	D	29.1	C	37.0	D	28.3	C	37.5	D	29.1	C
73	Marengo Street / Mission Road	Signal	35.3	D	43.6	D	37.5	D	46.1	D	38.7	D	37.9	D	38.3	D	40.4	D	41.6	D	40.3	D	39.6	D	39.3	D	37.8	D	39.0	D	41.6	D	39.7	D	40.1	D	38.2	D	40.2	D	38.8	D	40.1	D	38.2	D
74	Pasadena Avenue / Broadway	Signal	148.7	F	25.3	C	173.2	F	26.2	C	130.6	F	25.0	C	135.1	F	25.3	C	181.2	F	26.6	C	171.9	F	27.5	C	176.1	F	26.7	C	173.8	F	27.6	C	146.7	F	27.8	C	139.4	F	24.2	C	146.7	F	27.8	C
75	San Pasqual Avenue / York Boulevard	Signal	13.5	B	12.9	B	13.5	B	13.1	B	15.0	B	15.7	B	13.5	B	12.6	B	13.6	B	12.9	B	13.7	B	12.9	B	13.7	B	12.8	B	13.7	B	12.8	B	13.6	B	12.8	B	13.6	B	12.9	B	13.6	B	12.9	B
76	Soto Street / Marengo Street	Signal	15.7	B	12.4	B	16.0	B	12.6	B	15.3	B	15.2	B	15.2	B	15.2	B	15.8	B	15.8	B	15.3	B	15.4	B	15.4	B	15.3	B	15.3	B	15.4	B	15.6	B	15.1	B	15.5	B	15.0	B	15.6	B	15.1	B
77	Myrtle Avenue / Duarte Road	Signal	47.2	D	50.7	D	47.5	D	50.1	D	46.0	D	49.1	D	46.0	D	49.1	D	48.2	D	49.1	D	44.7	D	48.4	D	45.1	D	48.5	D	45.0	D	48.4	D	41.6	D	45.0	D	41.6	D	45.7	D	41.6	D	45.8	D
78	Myrtle Avenue / I-210 EB Ramps	Signal	27.6	C	36.0	D	27.6	C	35.4	D	27.2	C	35.2	D	27.2	C	34.4	C	28.1	C	35.3	D	26.5	C	34.6	C	26.5	C	34.2	C	26.6	C	35.1	D	25.0	C	32.3	C	26.2	C	32.3	C	25.0	C	32.3	C
79	Atlantic Boulevard / Cesar Chavez Avenue	Signal	33.4	C	49.1	D	33.9	C	50.3	D	32.7	C	48.8	D	31.9	C	47.6	D	34.3	C	50.1	D	34.6	C	51.4	D	34.2	C	49.3	D	34.7	C	50.7	D	35.0	C	52.7	D	34.7	C	52.0	D	35.0	C	52.7	D
80	Atlantic Boulevard / Garvey Avenue	Signal	36.7	D	54.5	D	38.3	D	56.3	E	35.7	D	54.8	D	35.8	D	53.1	D	37.4	D	56.3	E	37.4	D	55.9	E	36.6	D	52.8	D	37.2	D	5													

TABLE 5-71

Opening Year (2020/2025) Intersection Operations Summary
 SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	2025 Freeway Tunnel Alternative																																													
			2020 No Build Alternative				2025 No Build Alternative				2020 TSM/TDM Alternative				2020 BRT Alternative				2025 LRT Alternative				Single Bore (Toll)				Single Bore (Toll-No Trucks)				Single Bore (Toll-Express Bus)				Dual Bore (No Toll)				Dual Bore (No Toll-No Trucks)				Dual Bore (Toll)					
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM							
Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS											
101	Lincoln Avenue / Orange Grove Boulevard	Signal	13.0	B	12.8	B	12.8	B	12.7	B	13.3	B	13.1	B	13.2	B	13.1	B	13.0	B	20.0	B	13.3	B	12.8	B	13.3	B	12.8	B	13.3	B	12.2	B	13.2	B	12.2	B	13.3	B	12.2	B						
102	Los Robles Avenue / Colorado Boulevard	Signal	13.0	B	15.2	B	13.6	B	15.4	B	13.1	B	15.5	B	13.0	B	15.2	B	13.7	B	15.6	B	13.7	B	14.9	B	13.6	B	14.8	B	13.7	B	14.1	B	13.1	B	14.1	B	13.1	B	14.1	B						
103	Los Robles Avenue / Walnut Street	Signal	14.4	B	18.1	B	14.0	B	19.1	B	14.5	B	16.0	B	14.5	B	17.4	B	14.1	B	18.3	B	13.6	B	14.6	B	14.2	B	14.5	B	14.1	B	14.7	B	14.7	B	14.8	B	14.6	B	14.7	B	14.7	B				
104	Marengo Avenue / Colorado Boulevard	Signal	17.9	B	19.5	B	17.8	B	19.6	B	17.8	B	19.3	B	17.7	B	18.6	B	18.0	B	19.3	B	17.4	B	18.7	B	17.2	B	18.3	B	17.4	B	18.7	B	16.9	B	18.2	B	16.6	B	18.1	B	16.9	B	18.2	B		
105	Marengo Street / Corson Street (I-210 EB Ramps)	Signal	20.2	C	15.2	B	20.3	C	15.3	B	18.8	B	15.7	B	18.4	B	15.7	B	17.7	B	15.6	B	18.1	B	14.6	B	17.6	B	14.3	B	17.8	B	14.6	B	16.8	B	14.5	B	16.2	B	14.8	B	16.8	B	14.5	B		
106	Marengo Street / Maple Street (I-210 WB Ramps)	Signal	25.8	C	34.8	C	25.0	C	36.6	D	23.2	C	34.8	C	26.1	C	34.9	C	24.5	C	31.8	C	24.8	C	36.5	D	25.3	C	40.1	D	24.8	C	39.0	D	24.2	C	28.3	C	24.5	C	28.6	C	24.2	C	29.6	C		
107	Orange Grove Boulevard / Colorado Boulevard	Signal	19.9	B	17.7	B	19.7	B	17.8	B	22.7	C	18.2	B	22.7	C	18.3	B	22.4	C	18.5	B	52.4	D	28.7	C	48.0	D	27.8	C	50.2	D	28.3	C	44.4	D	25.1	C	44.4	D	25.0	C	44.4	D	25.1	C		
108	Orange Grove Boulevard / Walnut Street	Signal	5.9	A	7.4	A	6.0	A	7.4	A	6.1	A	7.5	A	6.2	A	7.6	A	6.2	A	7.6	A	8.8	A	8.1	A	8.6	A	8.1	A	8.5	A	8.1	A	8.1	A	8.0	A	8.1	A	7.9	A	8.1	A	8.0	A		
109	Saint John Avenue / California Boulevard	Signal	27.3	C	20.8	C	27.0	C	21.2	C	48.7	D	27.0	C	49.0	D	26.6	C	44.3	D	26.8	C	17.0	B	14.1	B	16.2	B	15.2	B	15.9	B	15.0	B	14.9	B	14.6	B	14.5	B	14.9	B	14.4	B	14.9	B	14.4	B
110	Saint John Avenue / Colorado Boulevard	Signal	12.7	B	12.7	B	12.3	B	12.9	B	12.8	B	12.9	B	12.8	B	12.7	B	12.8	B	13.3	B	14.6	B	14.7	B	15.2	B	20.0	C	15.1	B	18.7	B	15.4	B	20.9	C	15.1	B	19.5	B	15.4	B	20.9	C		
111	Saint John Avenue / Del Mar Boulevard	Signal	8.4	A	8.7	A	8.6	A	8.7	A	29.3	C	15.0	B	24.3	C	16.0	B	26.3	C	16.0	B	43.6	D	20.4	C	49.4	D	21.2	C	43.6	D	20.4	C	41.7	D	18.0	B	42.1	D	17.2	B	42.1	D	18.2	B		
112	San Rafael Avenue / SR 134 EB Ramps	Signal	3.4	A	10.6	B	5.6	A	10.6	B	8.1	A	12.2	B	3.1	A	10.2	B	12.6	B	11.9	B	9.7	A	10.3	B	7.2	A	10.7	B	14.2	B	11.5	B	14.0	B	11.0	B	12.1	B	10.2	B	6.0	A	10.6	B		
113	San Rafael Avenue / SR 134 WB Ramps	Signal	14.5	B	13.4	B	14.5	B	13.4	B	15.2	B	15.6	B	14.2	B	16.3	B	14.6	B	14.9	B	14.2	B	16.2	B	14.2	B	16.3	B	15.2	B	17.5	B	15.7	B	16.0	B	16.1	B	15.8	B	13.2	B	16.4	B		
114	Sierra Madre Boulevard / Del Mar Boulevard	Signal	29.5	C	32.4	C	30.5	C	33.8	C	30.3	C	31.2	C	30.2	C	31.1	C	32.3	C	32.3	C	26.3	C	31.6	C	26.0	C	31.5	C	26.1	C	31.2	C	24.7	C	26.8	C	24.7	C	26.0	C	24.1	C	26.8	C		
115	Rosemead Boulevard / Lower Azusa Road	Signal	28.3	C	24.3	C	27.2	C	24.3	C	112.8	F	56.5	E	62.4	E	43.5	D	63.2	E	44.3	D	54.2	D	38.9	D	52.1	D	38.9	D	52.2	D	38.8	D	47.0	D	34.5	C	46.7	D	33.3	C	47.0	D	34.5	C		
116	Rosemead Boulevard / Marshall Street	Signal	31.2	C	44.1	D	33.2	C	45.3	D	25.6	C	31.3	C	25.1	C	30.3	C	28.0	C	32.0	C	26.0	C	31.8	C	25.8	C	32.0	C	26.1	C	30.6	C	26.0	C	29.7	C	25.9	C	29.3	C	26.3	C	29.7	C		
117	Rosemead Boulevard / Mission Drive	Signal	43.7	D	51.0	D	44.8	D	51.4	D	79.0	E	74.6	E	79.8	E	69.9	E	88.0	F	73.6	E	78.6	E	69.4	E	77.3	E	68.9	E	78.2	E	69.3	E	73.5	E	65.9	E	73.1	E	66.6	E	73.5	E	65.9	E		
118	Rosemead Boulevard / Valley Boulevard	Signal	51.1	D	55.8	E	53.9	D	55.9	E	46.4	D	61.3	E	46.6	D	56.8	E	47.4	D	58.3	E	45.5	D	61.0	E	45.5	D	56.4	E	45.5	D	56.8	E	43.7	D	55.0	E	43.3	D	54.4	D	43.7	D	55.0	E		
119	Temple City Boulevard / Valley Boulevard	Signal	64.4	E	59.9	E	66.2	E	61.5	E	58.3	E	52.7	D	57.7	E	52.4	D	61.9	E	53.6	D	58.7	E	52.4	D	56.9	E	50.6	D	58.4	E	51.1	D	55.2	E	47.9	D	53.6	D	47.0	D	55.2	E	47.9	D		
120	Walnut Grove Avenue / Mission Drive	Signal	14.1	B	14.3	B	14.5	B	14.5	B	13.0	B	13.9	B	13.0	B	13.8	B	14.3	B	14.2	B	13.5	B	13.4	B	13.2	B	13.5	B	13.4	B	13.3	B	12.5	B	11.8	B	12.4	B	11.3	B	12.5	B	11.8	B		
121	Walnut Grove Avenue / Valley Boulevard	Signal	19.4	B	21.8	C	20.0	B	23.2	C	20.3	C	28.8	C	20.2	C	28.6	C	23.0	C	26.8	C	21.9	C	25.1	C	21.6	C	21.5	C	24.8	C	20.4	C	28.9	C	20.2	C	27.4	C	20.4	C	28.9	C				
122	Del Mar Avenue / Mission Road	Signal	82.8	F	61.3	E	98.2	F	62.6	E	106.8	F	74.2	E	110.1	F	73.5	E	165.9	F	87.3	F	118.4	F	68.3	E	118.4	F	75.0	E	113.3	F	64.3	E	105.6	F	45.0	D	99.3	F	43.0	D	105.6	F	45.8	D		
123	Del Mar Avenue / Valley Boulevard	Signal	34.7	C	52.6	D	35.8	D	53.4	D	36.6	D	61.7	E	35.8	D	60.3	E	42.0	D	59.0	E	37.2	D	42.8	D	36.6	D	55.6	E	37.2	D	42.8	D	36.2	D	57.6	E	36.2	D	56.8	E	36.2	D	57.6	E		
124	Rosemead Boulevard / Huntington Drive	Signal	32.4	C	50.4	D	33.0	C	51.2	D	34.8	C	51.0	D	34.8	C	51.4	D	35.5	D	52.8	D	32.9	C	50.2	D	32.4	C	50.2	D	32.6	C	49.8	D	31.4	C	46.0	D	31.0	C	44.9	D	31.4	C	46.0	D		
125	San Gabriel Boulevard / Las Tunas Drive	Signal	54.5	D	96.9	F	56.9	E	98.8	F	53.5	D	97.3	F	53.4	D	96.6	F	56.3	E	99.6	F	53.0	D	93.7	F	52.0	D	91.9	F	52.2	D	92.4	F	49.8	D	86.3	F	49.0	D	83.6	F	49.8	D	86.3	F		
126	San Gabriel Boulevard / Marshall Street	Signal	45.8	D	34.5	C	45.9	D	36.1	D	13.1	B	13.9	B	13.2	B	13.2	B	13.2	B	13.4	B	13.0	B	13.8	B	13.0	B	13.1	B	13.0	B	13.1	B	12.7	B	12.9	B	12.7	B	12.8	B	12.7	B	12.9	B		
127	San Gabriel Boulevard / Mission Road	Signal	25.8	C	25.6	C	27.4	C	25.1	C	28.4	C	25.1	C	25.9	C	25.3	C	28.5	C	27.0	C	25.1	C	24.6	C	26.6	C	24.5	C	28.0	C	24.4	C	25.1	C	24.0	C	25.0	C	23.4	C	25.1	C	24.0	C		
128	San Gabriel Boulevard / Valley Boulevard	Signal	37.6	D	58.1	E	38.2	D	58.8	E	35.8	D	58.0	E	35.9	D	56.4	E	37.3	D	59.0	E	35.6	D	56.2	E	35.6	D	55.3	E	35.5	D	55.6	E	34.1	C	50.5	D	34.2	C	49.9	D	34.1	C	50.5	D		
129	Walnut Grove Avenue / Broadway	Signal	15.2	B	27.7	C	15.6	B	28.7	C	17.4	B	20.7	C	17.4	B	21.2	C	17.6	B	25.4	C	17.9	B	21.6	C	17.7	B	21.7	C	16.7	B	21.3	C	16.8	B	19.6	B	15.8	B	18.8	B	16.8	B	19.6	B		
130	Atlantic Boulevard / Garfield Avenue	Signal	27.5	C	26.5	C	27.4	C	26.4	C	26.2	C	33.0	C	27.0	C	33.3	C	25.7	C	33.0	C	24.5	C	28.5	C	24.1	C	27.8	C	24.3	C	27.9	C	22.6	C	27.7	C	22.3	C								

TABLE 5-72

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound SR 2
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 2 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2EBGP0001	South of I-5 off-ramp	I-5 off-ramp	1430	A	1430	A	1410	A	1430	A	1400	A	1410	A	1410	A	1420	A	1400	A	1420	A	1420	A
2EBGP0002	I-5 off-ramp	SB I-5 on-ramp	1050	A	1060	A	1050	A	1050	A	1060	A	1050	A	1060	A	1030	A	1040	A	1030	A	1030	A
2EBGP0003	SB I-5 on-ramp	NB I-5 on-ramp	1310	B	1340	B	1310	B	1310	B	1300	B	1280	B	1300	B	1230	B	1220	B	1220	B	1220	B
2EBGP0004	NB I-5 on-ramp	Fletcher on-ramp	3210	B	3190	B	3190	B	3180	B	2870	B	2860	B	2880	B	2600	A	2550	A	2620	A	2620	A
2EBGP0005	Fletcher on-ramp	San Fernando off-ramp	4020	B	3990	B	4010	B	4020	B	3680	B	3680	B	3690	B	3420	B	3400	B	3440	B	3440	B
2EBGP0006	San Fernando off-ramp	San Fernando on-ramp	3230	B	3210	B	3220	B	3190	B	2820	B	2840	B	2830	B	2530	A	2520	A	2580	A	2580	A
2EBGP0007	San Fernando on-ramp	Verdugo off-ramp	3730	B	3700	B	3710	B	3680	B	3310	B	3330	B	3320	B	3030	B	3020	B	3080	B	3080	B
2EBGP0008	Verdugo off-ramp	Verdugo on-ramp	3200	B	3180	B	3190	B	3180	B	2790	A	2790	A	2790	A	2500	A	2480	A	2540	A	2540	A
2EBGP0009	Verdugo on-ramp	York on-ramp	3580	B	3560	B	3570	B	3560	B	3170	A	3190	A	3160	A	2880	A	2860	A	2930	A	2930	A
2EBGP0010	York on-ramp	Colorado off-ramp	4480	C	4420	C	4420	C	4420	C	4020	C	4040	C	4020	C	3730	C	3710	C	3770	C	3770	C
2EBGP0011	Colorado off-ramp	SR 134 EB off-ramp	3560	B	3500	B	3510	B	3490	B	3010	B	3030	B	3010	B	2680	A	2690	A	2740	A	2740	A
2EBGP0012	SR 134 EB off-ramp	SR 134 WB off-ramp	2670	B	2620	B	2630	B	2600	B	2150	B	2180	B	2150	B	1840	B	1850	B	1910	B	1910	B
2EBGP0013	SR 134 WB off-ramp	Holly off-ramp	2100	B	2070	B	2070	B	2080	B	1460	A	1490	B	1470	B	1260	A	1320	B	1320	B	1320	B
2EBGP0014	Holly off-ramp	Holly on-ramp	1870	A	1830	A	1830	A	1840	A	1240	A	1280	A	1240	A	1060	A	1120	A	1120	A	1120	A
2EBGP0015	Holly on-ramp	SR 134 on-ramp	2410	B	2360	B	2370	B	2370	B	1780	A	1810	A	1780	A	1600	A	1660	A	1650	A	1650	A
2EBGP0016	SR 134 on-ramp	Mountain off-ramp	3610	B	3570	B	3570	B	3570	B	2990	B	3020	B	2990	B	2820	B	2890	B	2870	B	2870	B
2EBGP0017	Mountain off-ramp	Mountain on-ramp	2990	A	2960	A	2960	A	2950	A	2380	A	2410	A	2380	A	2210	A	2280	A	2260	A	2260	A
2EBGP0018	Mountain on-ramp	Fern Lane Underpass	3320	B	3280	B	3290	B	3290	B	2710	A	2750	A	2710	A	2550	A	2620	A	2600	A	2600	A
2EBGP0019	Fern Lane Underpass	EB I-210/Verdugo off-ramp	3320	A	3280	A	3290	A	3290	A	2710	A	2750	A	2710	A	2550	A	2620	A	2600	A	2600	A
2EBGP0020	EB I-210/Verdugo off-ramp	Foothill off-ramp	2440	A	2440	A	2440	A	2420	A	2080	A	2110	A	2080	A	1980	A	2020	A	2010	A	2010	A
2EBGP0021	Foothill off-ramp	North of Foothill off-ramp	2130	B	2130	B	2130	B	2110	A	1800	A	1830	A	1800	A	1700	A	1740	A	1730	A	1730	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-73

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound SR 2
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 2 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2EBGP0001	South of I-5 off-ramp	I-5 off-ramp	3120	B	3170	B	3150	B	3140	B	3130	B	3100	B	3100	B	3050	B	3050	B	3050	B	3050	B
2EBGP0002	I-5 off-ramp	SB I-5 on-ramp	2340	C	2360	C	2360	C	2340	C	2360	C	2350	C	2360	C	2360	C	2330	B	2350	C	2350	C
2EBGP0003	SB I-5 on-ramp	NB I-5 on-ramp	2870	C	2860	C	2870	C	2870	C	2880	C	2880	C	2890	C	2850	C	2810	C	2830	C	2830	C
2EBGP0004	NB I-5 on-ramp	Fletcher on-ramp	7270	D	7200	D	7170	D	7240	D	7020	D	6940	D	7060	D	6680	D	6590	D	6700	D	6700	D
2EBGP0005	Fletcher on-ramp	San Fernando off-ramp	8400	D	8330	D	8300	D	8370	D	8150	D	8060	D	8180	D	7820	D	7720	D	7840	D	7840	D
2EBGP0006	San Fernando off-ramp	San Fernando on-ramp	7630	D	7580	D	7560	D	7610	D	7330	D	7240	D	7340	D	6910	D	6820	D	6960	D	6960	D
2EBGP0007	San Fernando on-ramp	Verdugo off-ramp	8580	F	8550	F	8520	F	8560	F	8280	E	8190	E	8290	E	7860	E	7770	D	7900	E	7900	E
2EBGP0008	Verdugo off-ramp	Verdugo on-ramp	7570	D	7530	D	7490	D	7550	D	7290	D	7180	D	7300	D	6850	D	6750	D	6890	D	6890	D
2EBGP0009	Verdugo on-ramp	York on-ramp	7970	C	7930	C	7890	C	7950	C	7640	C	7550	C	7670	C	7200	C	7090	C	7230	C	7230	C
2EBGP0010	York on-ramp	Colorado off-ramp	8640	E	8580	E	8540	E	8610	E	8300	E	8200	E	8320	D	7850	E	7750	C	7890	C	7890	C
2EBGP0011	Colorado off-ramp	SR 134 EB off-ramp	7390	C	7320	C	7280	C	7350	C	6940	C	6860	C	6960	C	6330	C	6280	C	6410	C	6410	C
2EBGP0012	SR 134 EB off-ramp	SR 134 WB off-ramp	5480	D	5420	D	5380	D	5440	D	5030	D	4960	D	5060	C	4480	D	4450	C	4560	C	4560	C
2EBGP0013	SR 134 WB off-ramp	Holly off-ramp	4230	C	4150	C	4130	C	4180	C	3670	B	3580	B	3700	B	3060	B	3130	B	3170	B	3170	B
2EBGP0014	Holly off-ramp	Holly on-ramp	3920	B	3830	B	3810	B	3860	B	3300	B	3220	B	3330	B	2720	A	2800	A	2830	A	2830	A
2EBGP0015	Holly on-ramp	SR 134 on-ramp	4610	B	4520	B	4510	B	4560	B	4020	B	3930	B	4050	B	3450	B	3520	B	3560	B	3560	B
2EBGP0016	SR 134 on-ramp	Mountain off-ramp	7440	F	7370	F	7340	F	7400	F	6950	F	6860	F	6980	F	6470	F	6480	F	6520	F	6520	F
2EBGP0017	Mountain off-ramp	Mountain on-ramp	6570	C	6490	C	6470	C	6530	C	6030	C	5940	C	6060	C	5540	B	5580	B	5610	B	5610	B
2EBGP0018	Mountain on-ramp	Fern Lane Underpass	6930	C	6840	C	6820	C	6890	C	6430	C	6330	C	6450	C	5970	C	5990	C	6010	C	6010	C
2EBGP0019	Fern Lane Underpass	EB I-210/Verdugo off-ramp	6930	C	6840	B	6820	B	6890	C	6430	B	6330	B	6450	B	5970	B	5990	B	6010	B	6010	B
2EBGP0020	EB I-210/Verdugo off-ramp	Foothill off-ramp	5160	B	5130	B	5120	B	5150	B	4750	B	4650	B	4760	B	4340	B	4370	B	4380	B	4380	B
2EBGP0021	Foothill off-ramp	North of Foothill off-ramp	3800	C	3760	C	3760	C	3790	C	3440	B	3350	B	3460	B	3050	B	3080	B	3090	B	3090	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-74

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound SR 2
 SR 710 North Study, Los Angeles County, California

Westbound State Route 2 - AM Peak Hour Analysis																						
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2WBGPO001	North of Foothill on-ramp	Foothill on-ramp	5560	D	5570	D	5570	D	5550	D	5250	D	5240	D	5260	D	5050	D	5130	D	5120	D
2WBGPO002	Foothill on-ramp	EB I-210/Verdugo on-ramp	5890	E	5890	E	5890	E	5880	E	5580	D	5570	D	5600	D	5380	D	5460	D	5450	D
2WBGPO003	EB I-210/Verdugo on-ramp	Mountain off-ramp	6430	D	6360	D	6340	D	6410	D	5930	D	5970	D	5970	D	5690	C	5770	C	5780	C
2WBGPO004	Mountain off-ramp	Mountain on-ramp	6010	C	5920	C	5920	C	5980	C	5480	C	5520	C	5530	C	5280	C	5350	C	5360	C
2WBGPO005	Mountain on-ramp	SR 134 off-ramp	6740	C	6650	C	6650	C	6710	C	6210	C	6250	C	6260	C	6010	C	6070	C	6090	C
2WBGPO006	SR 134 off-ramp	Holly off-ramp	4140	C	4060	C	4050	C	4110	C	3570	C	3610	C	3630	C	3330	B	3380	B	3410	B
2WBGPO007	Holly off-ramp	Holly on-ramp	3490	B	3410	B	3390	B	3450	B	2930	B	2970	B	2980	B	2700	A	2740	A	2780	A
2WBGPO008	Holly on-ramp	SR 134 EB on-ramp	3760	B	3680	B	3670	B	3730	B	3220	B	3250	B	3280	B	2950	B	2980	B	3030	B
2WBGPO009	SR 134 EB on-ramp	SR 134 WB on-ramp	5210	D	5100	C	5080	C	5140	C	4690	C	4730	C	4760	C	4330	C	4310	C	4410	C
2WBGPO010	SR 134 WB on-ramp	Colorado on-ramp	7520	C	7400	C	7390	C	7480	C	7010	C	7040	C	7080	C	6600	C	6560	C	6670	C
2WBGPO011	Colorado on-ramp	York off-ramp	8820	F	8700	F	8680	F	8780	F	8380	F	8410	F	8450	F	8010	F	7930	F	8060	F
2WBGPO012	York off-ramp	Verdugo off-ramp	7690	E	7570	E	7550	E	7640	E	7270	E	7280	E	7320	E	6890	D	6810	D	6940	D
2WBGPO013	Verdugo off-ramp	Verdugo on-ramp	7110	D	7020	D	7000	D	7100	D	6720	D	6730	D	6780	D	6350	D	6270	C	6410	D
2WBGPO014	Verdugo on-ramp	San Fernando off-ramp	8550	F	8430	F	8420	F	8510	F	8210	E	8180	E	8250	F	7870	E	7770	E	7900	E
2WBGPO015	San Fernando off-ramp	San Fernando on-ramp	7710	E	7610	D	7580	D	7690	D	7330	D	7340	D	7400	D	7000	D	6920	D	7030	D
2WBGPO016	San Fernando on-ramp	Fletcher off-ramp	9100	F	9020	F	8980	F	9100	F	8770	F	8750	F	8850	F	8470	F	8370	F	8460	F
2WBGPO017	Fletcher off-ramp	I-5 off-ramp	7910	E	7830	E	7790	E	7900	E	7560	D	7550	D	7630	D	7260	D	7180	D	7250	D
2WBGPO018	I-5 off-ramp	NB I-5 on-ramp	2530	B	2560	B	2500	B	2510	B	2450	B	2380	B	2400	B	2320	B	2290	B	2310	B
2WBGPO019	NB I-5 on-ramp	SB I-5 on-ramp	2670	A	2700	A	2640	A	2650	A	2590	A	2510	A	2540	A	2460	A	2420	A	2440	A
2WBGPO020	SB I-5 on-ramp	South of SB I-5 on-ramp	3460	A	3460	A	3440	A	3460	A	3410	A	3380	A	3390	A	3320	A	3320	A	3310	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-75

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound SR 2
 SR 710 North Study, Los Angeles County, California

Westbound State Route 2 - PM Peak Hour Analysis																						
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
2WBGPO001	North of Foothill on-ramp	Foothill on-ramp	2320	B	2320	B	2320	B	2320	B	1980	A	2000	A	2000	A	1920	A	1940	A	1940	A
2WBGPO002	Foothill on-ramp	EB I-210/Verdugo on-ramp	2910	B	2920	B	2910	B	2910	B	2550	B	2580	B	2570	B	2490	B	2500	B	2510	B
2WBGPO003	EB I-210/Verdugo on-ramp	Mountain off-ramp	3760	B	3750	B	3740	B	3770	B	3270	B	3300	B	3290	B	3150	B	3200	B	3190	B
2WBGPO004	Mountain off-ramp	Mountain on-ramp	3410	B	3400	B	3390	B	3410	B	2910	B	2940	B	2940	B	2790	A	2850	A	2840	A
2WBGPO005	Mountain on-ramp	SR 134 off-ramp	4080	B	4060	B	4050	B	4080	B	3590	B	3620	B	3610	B	3440	B	3470	B	3500	B
2WBGPO006	SR 134 off-ramp	Holly off-ramp	2190	B	2180	B	2170	B	2180	B	1710	B	1710	B	1710	B	1510	B	1560	B	1560	B
2WBGPO007	Holly off-ramp	Holly on-ramp	1640	A	1620	A	1610	A	1620	A	1150	A	1160	A	1160	A	970	A	1010	A	1010	A
2WBGPO008	Holly on-ramp	SR 134 EB on-ramp	1860	A	1840	A	1820	B	1840	A	1370	A	1370	A	1370	A	1170	A	1220	A	1220	A
2WBGPO009	SR 134 EB on-ramp	SR 134 WB on-ramp	2870	B	2840	B	2830	C	2830	B	2420	B	2420	B	2420	B	2090	B	2080	B	2160	B
2WBGPO010	SR 134 WB on-ramp	Colorado on-ramp	4320	B	4280	B	4270	B	4290	B	3820	B	3830	B	3820	B	3460	A	3460	A	3540	A
2WBGPO011	Colorado on-ramp	York off-ramp	5190	C	5150	B	5130	B	5160	C	4740	B	4760	B	4740	B	4380	B	4360	B	4460	B
2WBGPO012	York off-ramp	Verdugo off-ramp	4340	C	4270	C	4260	C	4290	C	3880	C	3900	C	3890	C	3490	B	3480	B	3570	B
2WBGPO013	Verdugo off-ramp	Verdugo on-ramp	3850	B	3830	B	3810	B	3850	B	3450	B	3480	B	3460	B	3050	B	3040	B	3130	B
2WBGPO014	Verdugo on-ramp	San Fernando off-ramp	4830	C	4800	C	4790	F	4820	C	4430	C	4460	C	4450	C	4080	C	4060	C	4140	C
2WBGPO015	San Fernando off-ramp	San Fernando on-ramp	4080	B	4060	B	4020	B	4080	B	3660	B	3690	B	3680	B	3290	B	3260	B	3360	B
2WBGPO016	San Fernando on-ramp	Fletcher off-ramp	4880	B	4850	B	4830	B	4890	B	4500	B	4560	B	4550	B	4190	B	4170	B	4260	B
2WBGPO017	Fletcher off-ramp	I-5 off-ramp	4210	B	4180	B	4170	B	4230	B	3840	B	3900	B	3890	B	3520	B	3500	B	3590	B
2WBGPO018	I-5 off-ramp	NB I-5 on-ramp	1600	A	1610	A	1610	A	1660	A	1530	A	1490	A	1510	A	1410	A	1420	A	1450	A
2WBGPO019	NB I-5 on-ramp	SB I-5 on-ramp	1680	A	1700	A	1700	A	1750	A	1610	A	1570	A	1600	A	1500	A	1500	A	1540	A
2WBGPO020	SB I-5 on-ramp	South of SB I-5 on-ramp	2240	A	2240	A	2250	A	2270	A	2150	A	2130	A	2180	A	2070	A	2070	A	2090	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-76

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound SR 60
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 60 - AM Peak Hour Analysis																				
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative									
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)	Single Bore (Toll-No Truck)	Single Bore (Toll-Express Bus)	Dual Bore (No Toll)	Dual Bore (No Toll-No Trucks)	Dual Bore (Toll)				
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
60EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	3790	B	3780	B	3740	B	3770	B	3700	B	3680	B	3650	B	3640	B	3620	B
60EBGP0002	SB I-5 off-ramp	SB I-5/US 101/Soto on-ramp	2400	B	2450	B	2390	B	2390	B	2380	B	2370	B	2370	B	2290	B	2310	B
60EBGP0003	SB I-5/US 101/Soto on-ramp	Whittier/Lorena off-ramp	4520	C	4570	C	4540	C	4750	C	4430	C	4430	C	4490	C	4360	C	4350	C
60EBGP0004	Whittier/Lorena off-ramp	Lorena on-ramp	4050	B	4100	B	4070	B	4300	B	3960	B	3970	B	4030	B	3910	B	3900	B
60EBGP0005	Lorena on-ramp	Indiana on-ramp	4730	B	4750	B	4720	B	4950	B	4640	B	4650	B	4700	B	4570	B	4560	B
60EBGP0006	Indiana on-ramp	Downey off-ramp	5410	C	5390	C	5390	C	5620	C	5320	B	5330	B	5320	B	5210	B	5220	B
60EBGP0007	Downey off-ramp	Downey/Third on-ramp	5130	B	5110	B	5140	B	5360	B	5040	B	5050	B	5080	B	4940	B	4960	B
60EBGP0008	Downey/Third on-ramp	I-710 off-ramp	5620	B	5600	B	5630	B	5870	B	5540	B	5560	B	5590	B	5460	B	5470	B
60EBGP0009	I-710 off-ramp	I-710 on-ramp	4560	B	4590	C	4480	B	4770	C	4610	C	4540	B	4530	B	4890	C	4840	C
60EBGP0010	I-710 on-ramp	Atlantic off-ramp	6810	C	6780	C	6800	C	6750	C	6940	C	6940	C	6910	C	7120	C	7140	C
60EBGP0011	Atlantic off-ramp	SB Atlantic on-ramp	5860	C	5850	C	5870	C	5820	C	5980	C	5950	C	5930	C	6170	C	6150	C
60EBGP0012	SB Atlantic on-ramp	NB Atlantic on-ramp	6100	B	6090	B	6110	B	6060	B	6210	B	6190	B	6170	B	6380	B	6370	B
60EBGP0013	NB Atlantic on-ramp	Findlay off-ramp	6430	C	6420	C	6430	C	6380	C	6530	C	6500	C	6480	C	6680	C	6670	C
60EBGP0014	Findlay off-ramp	Garfield/Wilcox off-ramp	6090	C	6050	C	6070	C	6050	C	6160	C	6130	C	6110	C	6270	C	6280	C
60EBGP0015	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	5260	C	5240	C	5240	C	5250	C	5330	C	5320	C	5310	C	5450	C	5460	C
60EBGP0016	Garfield/Wilcox on-ramp	Paramount off-ramp	6200	C	6180	C	6180	C	6180	C	6250	C	6240	C	6240	C	6380	C	6380	C
60EBGP0017	Paramount off-ramp	SB Paramount on-ramp	5480	C	5460	C	5460	C	5460	C	5520	C	5500	C	5500	C	5640	C	5640	C
60EBGP0018	SB Paramount on-ramp	NB Paramount on-ramp	5660	C	5620	C	5640	C	5630	C	5700	C	5670	C	5660	C	5790	C	5800	C
60EBGP0019	NB Paramount on-ramp	San Gabriel off-ramp	5870	C	5850	C	5870	C	5850	C	5930	C	5900	C	5900	C	6010	C	6010	C
60EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	5470	C	5450	C	5480	C	5450	C	5530	C	5490	C	5490	C	5610	C	5600	C
60EBGP0021	San Gabriel on-ramp	Rosemead off-ramp	6230	D	6210	D	6230	D	6220	D	6270	D	6260	D	6260	D	6370	D	6360	D
60EBGP0022	Rosemead off-ramp	SB Rosemead on-ramp	5790	C	5780	C	5790	C	5780	C	5840	C	5820	C	5830	C	5920	C	5910	C
60EBGP0023	SB Rosemead on-ramp	NB Rosemead on-ramp	6520	C	6510	C	6530	C	6510	C	6570	C	6570	C	6550	C	6650	C	6650	C
60EBGP0024	NB Rosemead on-ramp	Santa Anita off-ramp	6800	C	6850	C	6880	C	6850	C	6920	C	6920	C	6910	C	6910	C	6930	C
60EBGP0025	Santa Anita off-ramp	SB Santa Anita on-ramp	6390	C	6460	C	6470	C	6420	C	6470	C	6470	C	6460	C	6470	C	6490	C
60EBGP0026	SB Santa Anita on-ramp	NB Santa Anita on-ramp	7060	C	7120	C	7140	C	7100	C	7150	C	7140	C	7130	C	7120	C	7150	C
60EBGP0027	NB Santa Anita on-ramp	Peck off-ramp	7130	D	7180	D	7210	D	7180	D	7200	D	7200	D	7190	D	7190	D	7220	D
60EBGP0028	Peck off-ramp	Peck on-ramp	6710	C	6780	C	6790	C	6780	C	6800	C	6800	C	6780	C	6800	C	6830	C
60EBGP0029	Peck on-ramp	I-605 off-ramp	7070	C	7140	C	7140	C	7130	C	7150	C	7150	C	7140	C	7160	C	7190	C
60EBGP0030	I-605 off-ramp	SB I-605 on-ramp	4740	C	4780	C	4780	C	4730	C	4800	C	4800	C	4810	C	4870	C	4850	C
60EBGP0031	SB I-605 on-ramp	NB I-605 on-ramp	5290	C	5310	C	5300	C	5250	C	5280	C	5290	C	5290	C	5320	C	5320	C
60EBGP0032	NB I-605 on-ramp	East of NB I-605 on-ramp	6900	C	6900	C	6870	C	6820	B	6940	C	6950	C	6970	C	6930	C	6930	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-77

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound SR 60
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 60 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	6710	C	6750	C	6700	C	6720	C	6660	C	6660	C	6640	C	6560	C	6550	C	6550	C		
60EBGP0002	SB I-5 off-ramp	SB I-5/US 101/Soto on-ramp	4880	D	4890	D	4890	D	4850	D	4830	D	4820	D	4800	D	4710	C	4720	C	4730	C		
60EBGP0003	SB I-5/US 101/Soto on-ramp	Whittier/Lorena off-ramp	9590	E	9570	E	9580	E	9510	E	9390	E	9310	E	9400	E	9210	E	9160	E	9220	E		
60EBGP0004	Whittier/Lorena off-ramp	Lorena on-ramp	8820	D	8800	D	8800	D	8760	D	8610	D	8540	D	8620	D	8440	D	8390	D	8440	D		
60EBGP0005	Lorena on-ramp	Indiana on-ramp	9550	D	9530	D	9540	D	9490	D	9340	D	9280	D	9360	D	9180	D	9130	D	9180	D		
60EBGP0006	Indiana on-ramp	Downey off-ramp	10,270	F	10,240	F	10,270	F	10,210	F	10,080	F	10,020	F	10,080	F	9960	F	9900	F	9970	F		
60EBGP0007	Downey off-ramp	Downey/Third on-ramp	9880	E	9850	E	9850	E	9800	E	9650	D	9590	D	9650	D	9480	D	9490	D	9520	D		
60EBGP0008	Downey/Third on-ramp	I-710 off-ramp	10,360	D	10,340	D	10,340	D	10,300	D	10,150	D	10,090	D	10,140	D	10,010	D	10,000	D	10,040	D		
60EBGP0009	I-710 off-ramp	I-710 on-ramp	8440	E	8360	E	8440	E	8450	E	8480	E	8460	E	8460	E	8720	E	8690	E	8700	E		
60EBGP0010	I-710 on-ramp	Atlantic off-ramp	12,450	F	12,440	F	12,440	F	12,440	F	12,560	F	12,580	F	12,560	F	12,690	F	12,700	F	12,680	F		
60EBGP0011	Atlantic off-ramp	SB Atlantic on-ramp	10,900	E	10,880	E	10,870	E	10,890	E	10,970	E	10,980	E	10,980	E	11,080	F	11,080	F	11,070	F		
60EBGP0012	SB Atlantic on-ramp	NB Atlantic on-ramp	11,390	D	11,380	D	11,370	D	11,380	D	11,460	D	11,480	D	11,470	D	11,560	D	11,560	D	11,550	D		
60EBGP0013	NB Atlantic on-ramp	Findlay off-ramp	11,840	F	11,830	F	11,820	F	11,820	F	11,910	F	11,920	F	11,910	F	11,990	F	12,000	F	11,980	F		
60EBGP0014	Findlay off-ramp	Garfield/Wilcox off-ramp	11,280	F	11,280	F	11,250	F	11,280	F	11,330	F	11,340	F	11,310	F	11,390	F	11,410	F	11,380	F		
60EBGP0015	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	9950	F	9940	F	9940	F	9960	F	9980	F	9990	F	9990	F	10,030	F	10,040	F	10,030	F		
60EBGP0016	Garfield/Wilcox on-ramp	Paramount off-ramp	11,450	F	11,440	F	11,440	F	11,460	F	11,480	F	11,480	F	11,480	F	11,540	F	11,540	F	11,530	F		
60EBGP0017	Paramount off-ramp	SB Paramount on-ramp	10,280	F	10,270	F	10,270	F	10,290	F	10,300	F	10,300	F	10,300	F	10,360	F	10,370	F	10,360	F		
60EBGP0018	SB Paramount on-ramp	NB Paramount on-ramp	10,600	F	10,590	F	10,590	F	10,620	F	10,620	F	10,620	F	10,630	F	10,680	F	10,690	F	10,680	F		
60EBGP0019	NB Paramount on-ramp	San Gabriel off-ramp	10,930	F	10,940	F	10,940	F	10,950	F	10,970	F	10,970	F	10,960	F	11,000	F	11,010	F	11,000	F		
60EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	10,280	F	10,280	F	10,280	F	10,300	F	10,310	F	10,320	F	10,310	F	10,350	F	10,360	F	10,340	F		
60EBGP0021	San Gabriel on-ramp	Rosemead off-ramp	11,220	F	11,220	F	11,220	F	11,250	F	11,270	F	11,270	F	11,260	F	11,300	F	11,310	F	11,290	F		
60EBGP0022	Rosemead off-ramp	SB Rosemead on-ramp	10,520	F	10,510	F	10,510	F	10,540	F	10,560	F	10,560	F	10,550	F	10,590	F	10,600	F	10,590	F		
60EBGP0023	SB Rosemead on-ramp	NB Rosemead on-ramp	11,410	F	11,410	F	11,410	F	11,440	F	11,460	F	11,450	F	11,450	F	11,470	F	11,480	F	11,470	F		
60EBGP0024	NB Rosemead on-ramp	Santa Anita off-ramp	11,740	F	11,750	F	11,740	F	11,750	F	11,780	F	11,780	F	11,780	F	11,710	F	11,730	F	11,730	F		
60EBGP0025	Santa Anita off-ramp	SB Santa Anita on-ramp	11,010	F	11,020	F	11,010	F	11,010	F	11,030	F	11,020	F	11,030	F	10,980	E	10,990	E	10,990	E		
60EBGP0026	SB Santa Anita on-ramp	NB Santa Anita on-ramp	11,670	F	11,680	F	11,670	F	11,670	F	11,690	F	11,680	F	11,690	F	11,640	F	11,660	F	11,650	F		
60EBGP0027	NB Santa Anita on-ramp	Peck off-ramp	11,720	F	11,730	F	11,730	F	11,720	F	11,740	F	11,740	F	11,740	F	11,690	F	11,710	F	11,700	F		
60EBGP0028	Peck off-ramp	Peck on-ramp	11,020	F	11,030	F	11,020	F	11,030	F	11,040	F	11,030	F	11,040	F	11,010	F	11,030	F	11,020	F		
60EBGP0029	Peck on-ramp	I-605 off-ramp	11,570	F	11,580	F	11,580	F	11,580	F	11,590	F	11,590	F	11,590	F	11,550	F	11,570	F	11,570	F		
60EBGP0030	I-605 off-ramp	SB I-605 on-ramp	7950	E	7970	E	7950	E	7950	E	7990	E	7980	E	7990	E	7940	E	7950	E	7950	E		
60EBGP0031	SB I-605 on-ramp	NB I-605 on-ramp	9180	F	9170	F	9170	F	9130	F	9140	F	9140	F	9140	F	9090	F	9110	F	9100	F		
60EBGP0032	NB I-605 on-ramp	East of NB I-605 on-ramp	12,210	E	12,190	E	12,200	E	12,170	E	12,230	E	12,230	E	12,240	E	12,190	E	12,200	E	12,190	E		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-78

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound SR 60
 SR 710 North Study, Los Angeles County, California

Westbound State Route 60 - AM Peak Hour Analysis																						
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60WBG0001	East of I-605 off-ramp	I-605 off-ramp	10,310	E	10,320	E	10,340	E	10,380	E	10,330	E	10,320	E	10,330	E	10,340	E	10,350	E	10,350	E
60WBG0002	I-605 off-ramp	NB I-605 on-ramp	6180	E	6230	E	6220	E	6400	E	6210	E	6210	E	6220	E	6250	E	6230	E	6250	E
60WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	7440	D	7480	D	7440	D	7650	D	7440	D	7430	D	7450	D	7450	D	7450	D	7460	D
60WBG0004	SB I-605 on-ramp	Peck off-ramp	9870	E	9940	E	9910	E	10,130	E	9940	E	9910	E	9950	E	9930	E	9930	E	9950	E
60WBG0005	Peck off-ramp	NB Peck on-ramp	9530	D	9580	D	9560	D	9800	E	9580	D	9550	D	9600	E	9570	D	9580	D	9590	E
60WBG0006	NB Peck on-ramp	SB Peck on-ramp	9910	E	9950	E	9940	E	10,150	E	9960	E	9930	E	9970	E	9950	E	9960	E	9980	E
60WBG0007	SB Peck on-ramp	Santa Anita off-ramp	10,300	F	10,350	F	10,330	F	10,550	E	10,360	F	10,320	F	10,370	F	10,340	F	10,350	F	10,370	F
60WBG0008	Santa Anita off-ramp	NB Santa Anita on-ramp	9410	D	9460	D	9440	D	9660	E	9470	D	9430	D	9480	D	9460	D	9460	D	9480	D
60WBG0009	NB Santa Anita on-ramp	SB Santa Anita on-ramp	9470	D	9500	D	9510	D	9690	E	9530	D	9500	D	9530	D	9520	D	9520	D	9540	D
60WBG0010	SB Santa Anita on-ramp	Rosemead off-ramp	10,030	E	10,030	E	10,020	E	10,230	F	10,060	E	10,020	E	10,070	E	10,040	E	10,030	E	10,070	E
60WBG0011	Rosemead off-ramp	NB Rosemead on-ramp	8870	D	8850	D	8860	D	9070	D	8890	D	8860	D	8890	D	8900	D	8870	D	8910	D
60WBG0012	NB Rosemead on-ramp	SB Rosemead on-ramp	9080	D	9080	D	9080	D	9270	D	9110	D	9070	D	9110	D	9120	D	9090	D	9120	D
60WBG0013	SB Rosemead on-ramp	San Gabriel off-ramp	9710	E	9690	E	9700	E	9910	E	9720	E	9690	E	9720	E	9730	E	9700	E	9740	E
60WBG0014	San Gabriel off-ramp	San Gabriel on-ramp	8560	D	8520	D	8530	D	8750	D	8570	D	8540	D	8560	D	8560	D	8550	D	8580	D
60WBG0015	San Gabriel on-ramp	Paramount off-ramp	8880	D	8860	D	8880	D	9040	D	8890	D	8880	D	8900	D	8900	D	8870	D	8930	D
60WBG0016	Paramount off-ramp	NB Paramount on-ramp	8420	D	8400	D	8400	D	8630	D	8440	D	8420	D	8430	D	8440	D	8400	D	8450	D
60WBG0017	NB Paramount on-ramp	SB Paramount on-ramp	8920	D	8910	D	8920	D	9110	D	8960	D	8940	D	8950	D	8950	D	8920	D	8980	D
60WBG0018	SB Paramount on-ramp	Garfield/Wilcox off-ramp	9260	D	9250	D	9260	D	9430	D	9290	D	9280	D	9290	D	9300	D	9270	D	9320	D
60WBG0019	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	8110	E	8100	E	8100	E	8310	E	8160	E	8160	E	8150	E	8170	E	8140	E	8180	E
60WBG0020	Garfield/Wilcox on-ramp	Findlay on-ramp	10,330	E	10,330	E	10,290	E	10,550	E	10,370	E	10,380	E	10,360	E	10,430	E	10,380	E	10,380	E
60WBG0021	Findlay on-ramp	Atlantic off-ramp	10,650	F	10,640	F	10,610	F	10,850	F	10,690	F	10,720	F	10,690	F	10,740	F	10,720	F	10,700	F
60WBG0022	Atlantic off-ramp	NB Atlantic on-ramp	10,030	E	10,020	E	9980	E	10,270	E	10,090	E	10,110	E	10,090	E	10,140	E	10,130	E	10,110	E
60WBG0023	NB Atlantic on-ramp	SB Atlantic on-ramp	10,580	D	10,540	D	10,530	D	10,780	D	10,630	D	10,660	D	10,620	D	10,720	D	10,680	D	10,650	D
60WBG0024	SB Atlantic on-ramp	I-710 off-ramp	11,000	F	10,960	F	10,930	F	11,200	F	11,070	F	11,100	F	11,070	F	11,140	F	11,140	F	11,100	F
60WBG0025	I-710 off-ramp	I-710 on-ramp	8240	D	8140	D	8140	D	8310	D	8200	D	8200	D	8240	D	8340	D	8260	D	8310	D
60WBG0026	I-710 on-ramp	Downey off-ramp	9820	F	9910	F	9940	F	10,020	F	9840	F	9850	F	9830	F	9790	F	9800	F	9890	F
60WBG0027	Downey off-ramp	Downey/Third on-ramp	9300	D	9400	D	9430	D	9510	D	9340	D	9350	D	9330	D	9210	D	9210	D	9310	D
60WBG0028	Downey/Third on-ramp	Indiana off-ramp	9520	E	9620	E	9640	E	9730	E	9560	E	9570	E	9550	E	9450	E	9460	E	9530	E
60WBG0029	Indiana off-ramp	Whittier/Lorena off-ramp	9080	D	9130	E	9160	E	9230	E	9110	E	9120	E	9090	E	9020	E	9020	E	9080	E
60WBG0030	Whittier/Lorena off-ramp	Lorena on-ramp	8600	D	8600	D	8660	D	8720	D	8580	D	8570	D	8560	D	8470	D	8470	D	8520	D
60WBG0031	Lorena on-ramp	NB I-5/US 101/Soto off-ramp	8850	D	8860	D	8920	D	8970	D	8850	D	8830	D	8830	D	8740	D	8730	D	8780	D
60WBG0032	NB I-5/US 101/Soto off-ramp	NB I-5 on-ramp	5880	F	5930	F	6000	F	5960	F	5910	F	5910	F	5910	F	5830	F	5850	F	5880	F
60WBG0033	NB I-5 on-ramp	Soto on-ramp	8740	F	8780	F	8830	F	8890	F	8740	F	8770	F	8750	F	8690	E	8680	E	8710	E
60WBG0034	Soto on-ramp	West of Soto on-ramp	9010	D	9070	D	9100	D	9190	D	9010	D	9050	D	9030	D	8980	D	8960	D	9000	D

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-79

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound SR 60
 SR 710 North Study, Los Angeles County, California

Westbound State Route 60 - PM Peak Hour Analysis																						
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
60WBG0001	East of I-605 off-ramp	I-605 off-ramp	8740	D	8720	D	8720	D	8710	D	8770	D	8770	D	8770	D	8740	D	8740	D	8750	D
60WBG0002	I-605 off-ramp	NB I-605 on-ramp	5390	D	5410	D	5420	D	5460	D	5410	D	5410	D	5410	D	5430	D	5430	D	5420	D
60WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	6470	D	6490	D	6490	D	6540	D	6480	D	6480	D	6470	D	6470	D	6480	D	6480	D
60WBG0004	SB I-605 on-ramp	Peck off-ramp	8000	D	8010	D	7990	D	8160	D	7990	D	7990	D	7990	D	8020	D	8050	D	8010	D
60WBG0005	Peck off-ramp	NB Peck on-ramp	7670	C	7670	C	7660	C	7830	C	7660	C	7640	C	7670	C	7700	C	7730	C	7690	C
60WBG0006	NB Peck on-ramp	SB Peck on-ramp	8000	D	8010	D	7990	D	8150	D	7990	D	7980	D	7990	D	8030	D	8060	D	8020	D
60WBG0007	SB Peck on-ramp	Santa Anita off-ramp	8280	D	8300	D	8280	D	8450	D	8280	D	8270	D	8280	D	8330	D	8360	D	8320	D
60WBG0008	Santa Anita off-ramp	NB Santa Anita on-ramp	7370	C	7400	C	7380	C	7540	C	7390	C	7380	C	7390	C	7450	C	7480	C	7440	C
60WBG0009	NB Santa Anita on-ramp	SB Santa Anita on-ramp	7410	C	7450	C	7430	C	7590	C	7450	C	7440	C	7450	C	7500	C	7530	C	7490	C
60WBG0010	SB Santa Anita on-ramp	Rosemead off-ramp	7880	D	7930	D	7910	D	8070	E	7930	D	7920	D	7930	D	7980	D	8010	D	7970	D
60WBG0011	Rosemead off-ramp	NB Rosemead on-ramp	6760	C	6770	C	6760	C	6930	C	6810	C	6800	C	6800	C	6960	C	6990	C	6930	C
60WBG0012	NB Rosemead on-ramp	SB Rosemead on-ramp	7000	C	7000	C	7000	C	7160	C	7050	C	7040	C	7050	C	7220	C	7240	C	7190	C
60WBG0013	SB Rosemead on-ramp	San Gabriel off-ramp	7590	D	7590	D	7590	D	7760	D	7650	D	7640	D	7650	D	7830	D	7850	D	7800	D
60WBG0014	San Gabriel off-ramp	San Gabriel on-ramp	6520	C	6510	C	6510	C	6690	C	6570	C	6560	C	6570	C	6750	C	6760	C	6720	C
60WBG0015	San Gabriel on-ramp	Paramount off-ramp	6830	D	6810	C	6810	C	7000	D	6880	D	6860	D	6880	D	7050	D	7060	D	7030	D
60WBG0016	Paramount off-ramp	NB Paramount on-ramp	6290	C	6260	C	6260	C	6460	C	6330	C	6300	C	6330	C	6500	C	6510	C	6480	C
60WBG0017	NB Paramount on-ramp	SB Paramount on-ramp	6690	C	6660	C	6670	C	6860	C	6740	C	6720	C	6740	C	6890	C	6900	C	6870	C
60WBG0018	SB Paramount on-ramp	Garfield/Wilcox off-ramp	6890	C	6860	C	6860	C	7050	C	6940	C	6930	C	6940	C	7090	C	7100	C	7080	C
60WBG0019	Garfield/Wilcox off-ramp	Garfield/Wilcox on-ramp	5830	C	5800	C	5800	C	6010	C	5900	C	5890	C	5900	C	6080	C	6080	C	6050	C
60WBG0020	Garfield/Wilcox on-ramp	Findlay on-ramp	6880	C	6830	C	6850	C	7050	C	6970	C	6970	C	6970	C	7140	C	7170	C	7110	C
60WBG0021	Findlay on-ramp	Atlantic off-ramp	7000	C	6960	C	6970	C	7170	C	7140	C	7140	C	7140	C	7310	C	7330	D	7290	C
60WBG0022	Atlantic off-ramp	NB Atlantic on-ramp	6240	C	6210	C	6220	C	6420	C	6380	C	6380	C	6380	C	6570	C	6580	C	6540	C
60WBG0023	NB Atlantic on-ramp	SB Atlantic on-ramp	6590	B	6550	F	6550	F	6760	F	6740	F	6740	F	6740	F	6930	F	6940	F	6900	F
60WBG0024	SB Atlantic on-ramp	I-710 off-ramp	6970	C	6930	C	6930	C	7140	C	7150	C	7140	C	7150	C	7340	C	7350	C	7310	C
60WBG0025	I-710 off-ramp	I-710 on-ramp	4520	B	4470	B	4480	B	4630	B	4510	B	4510	B	4520	B	4590	B	4620	B	4580	B
60WBG0026	I-710 on-ramp	Downey off-ramp	6000	C	5980	C	6040	C	6160	C	5890	C	5910	C	5920	C	5890	C	5940	C	5940	C
60WBG0027	Downey off-ramp	Downey/Third on-ramp	5510	B	5470	B	5540	B	5670	B	5360	B	5380	B	5390	B	5300	B	5350	B	5350	B
60WBG0028	Downey/Third on-ramp	Indiana off-ramp	5760	C	5730	C	5790	C	5920	C	5620	C	5640	C	5640	C	5560	C	5620	C	5610	C
60WBG0029	Indiana off-ramp	Whittier/Lorena off-ramp	5310	C	5270	C	5340	C	5430	C	5190	C	5200	C	5220	C	5160	C	5190	C	5180	C
60WBG0030	Whittier/Lorena off-ramp	Lorena on-ramp	4810	B	4760	B	4820	B	4910	B	4650	B	4640	B	4670	B	4610	B	4630	B	4620	B
60WBG0031	Lorena on-ramp	NB I-5/US 101/Soto off-ramp	5020	B	4970	B	5030	B	5110	B	4860	B	4850	B	4890	B	4820	B	4850	B	4840	B
60WBG0032	NB I-5/US 101/Soto off-ramp	NB I-5 on-ramp	2830	C	2830	C	2820	C	2870	C	2690	C	2710	C	2710	C	2720	C	2760	C	2720	C
60WBG0033	NB I-5 on-ramp	Soto on-ramp	5200	C	5190	C	5190	C	5310	C	5060	C	5050	C	5080	C	5030	C	5080	C	5030	C
60WBG0034	Soto on-ramp	West of Soto on-ramp	5400	B	5400	B	5400	B	5510	B	5270	B	5260	B	5290	B	5230	B	5280	B	5240	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-80

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Northbound SR 110
SR 710 North Study, Los Angeles County, California

Northbound State Route 110 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110NBGP0001	South of I-5/Riverside off-ramp	I-5/Riverside off-ramp	4840	C	4830	C	4840	C	4830	C	4790	C	4770	C	4770	C	4730	B	4710	B	4700	B	4700	B
110NBGP0002	I-5/Riverside off-ramp	Figueroa off-ramp	2940	C	3030	C	2990	C	3010	C	2990	C	2970	C	3010	C	2910	C	2900	C	2930	C	2930	C
110NBGP0003	Figueroa off-ramp	San Fernando on-ramp	2600	B	2670	B	2640	B	2650	B	2640	B	2660	B	2670	B	2560	B	2550	B	2580	B	2580	B
110NBGP0004	San Fernando on-ramp	I-5/Avenue 26 on-ramp	2660	B	2730	B	2700	B	2710	B	2700	B	2730	B	2730	B	2620	B	2610	B	2640	B	2640	B
110NBGP0005	I-5/Avenue 26 on-ramp	Avenue 43 off-ramp	3570	C	3540	C	3540	C	3600	C	3490	C	3490	C	3510	C	3330	C	3320	C	3340	C	3340	C
110NBGP0006	Avenue 43 off-ramp	Avenue 43 on-ramp	3320	B	3270	B	3290	B	3350	B	3220	B	3200	B	3230	B	3010	B	2990	B	3040	B	3040	B
110NBGP0007	Avenue 43 on-ramp	Avenue 52 off-ramp	3420	C	3370	C	3390	C	3440	C	3330	C	3310	C	3340	C	3120	C	3100	C	3160	C	3160	C
110NBGP0008	Avenue 52 off-ramp	Avenue 52 on-ramp	3040	B	3010	B	3020	B	3080	B	2950	B	2940	B	2960	B	2740	B	2720	B	2770	B	2770	B
110NBGP0009	Avenue 52 on-ramp	Via Marisol off-ramp	3160	C	3140	C	3140	C	3200	C	3090	C	3070	C	3100	C	2870	C	2850	C	2900	C	2900	C
110NBGP0010	Via Marisol off-ramp	Via Marisol on-ramp	2860	B	2840	B	2860	B	2900	B	2740	B	2740	B	2750	B	2520	B	2510	B	2570	B	2570	B
110NBGP0011	Via Marisol on-ramp	Avenue 60 off-ramp	2910	C	2920	C	2930	C	2970	C	2820	B	2820	B	2830	B	2610	B	2600	B	2650	B	2650	B
110NBGP0012	Avenue 60 off-ramp	Avenue 60 on-ramp	2810	B	2810	B	2830	B	2870	B	2710	B	2720	B	2730	B	2510	B	2500	B	2550	B	2550	B
110NBGP0013	Avenue 60 on-ramp	Marmion/Avenue 64 off-ramp	2920	C	2920	C	2930	C	2970	C	2800	C	2810	C	2820	C	2590	B	2580	B	2640	B	2640	B
110NBGP0014	Marmion/Avenue 64 off-ramp	Bridgewell off-ramp	2410	B	2460	B	2460	B	2490	B	2340	B	2350	B	2350	B	2130	B	2130	B	2170	B	2170	B
110NBGP0015	Bridgewell off-ramp	Orange Grove off-ramp	2370	B	2420	B	2420	B	2440	B	2300	B	2300	B	2310	B	2090	B	2080	B	2130	B	2130	B
110NBGP0016	Orange Grove off-ramp	Orange Grove on-ramp	1750	A	1810	A	1820	A	1830	A	1860	A	1870	A	1870	A	1760	A	1750	A	1770	A	1770	A
110NBGP0017	Orange Grove on-ramp	Fair Oaks off-ramp	1800	B	1910	B	1900	B	1920	B	1910	B	1920	B	1920	B	1810	B	1800	B	1820	B	1820	B
110NBGP0018	Fair Oaks off-ramp	North of Fair Oaks off-ramp	1180	A	1220	A	1180	A	1140	A	930	A	930	A	920	A	760	A	760	A	790	A	790	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-81

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Northbound SR 110
SR 710 North Study, Los Angeles County, California

Northbound State Route 110 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110NBGP0001	South of I-5/Riverside off-ramp	I-5/Riverside off-ramp	7010	D	7030	D	7010	D	7020	D	7010	D	7020	D	7010	D	6990	D	6980	D	7050	D	7050	D
110NBGP0002	I-5/Riverside off-ramp	Figueroa off-ramp	3980	C	3970	C	3960	C	3970	C	3950	C	3900	C	3950	C	3870	C	3870	C	3890	C	3890	C
110NBGP0003	Figueroa off-ramp	San Fernando on-ramp	3540	B	3550	B	3550	B	3550	B	3530	B	3530	B	3540	B	3470	B	3470	B	3500	B	3500	B
110NBGP0004	San Fernando on-ramp	I-5/Avenue 26 on-ramp	3620	C	3630	C	3620	C	3630	C	3620	C	3640	C	3630	C	3580	C	3590	C	3610	C	3610	C
110NBGP0005	I-5/Avenue 26 on-ramp	Avenue 43 off-ramp	5580	E	5520	E	5520	E	5530	E	5510	E	5540	E	5510	E	5330	E	5340	E	5370	E	5370	E
110NBGP0006	Avenue 43 off-ramp	Avenue 43 on-ramp	5080	D	5050	D	5060	D	5070	D	5080	D	5080	D	5080	D	4910	D	4900	D	4950	D	4950	D
110NBGP0007	Avenue 43 on-ramp	Avenue 52 off-ramp	5270	D	5240	D	5240	D	5250	D	5250	D	5250	D	5250	D	5010	D	5010	D	5060	D	5060	D
110NBGP0008	Avenue 52 off-ramp	Avenue 52 on-ramp	4560	C	4540	C	4540	C	4550	C	4560	C	4570	C	4570	C	4330	C	4320	C	4390	C	4390	C
110NBGP0009	Avenue 52 on-ramp	Via Marisol off-ramp	4790	D	4770	D	4770	D	4780	D	4790	D	4800	D	4800	D	4570	D	4560	D	4620	D	4620	D
110NBGP0010	Via Marisol off-ramp	Via Marisol on-ramp	4280	C	4260	C	4260	C	4270	C	4280	C	4280	C	4290	C	4050	C	4040	C	4110	C	4110	C
110NBGP0011	Via Marisol on-ramp	Avenue 60 off-ramp	4380	D	4360	D	4360	D	4370	D	4390	D	4390	D	4390	D	4160	C	4150	C	4220	C	4220	C
110NBGP0012	Avenue 60 off-ramp	Avenue 60 on-ramp	4200	C	4190	C	4190	C	4200	C	4210	C	4210	C	4220	C	3990	C	3980	C	4050	C	4050	C
110NBGP0013	Avenue 60 on-ramp	Marmion/Avenue 64 off-ramp	4390	D	4350	D	4360	D	4390	D	4340	D	4340	D	4350	D	4100	C	4090	C	4160	C	4160	C
110NBGP0014	Marmion/Avenue 64 off-ramp	Bridgewell off-ramp	3580	C	3560	C	3550	C	3600	C	3620	C	3610	C	3630	C	3400	C	3390	C	3460	C	3460	C
110NBGP0015	Bridgewell off-ramp	Bridgewell off-ramp	3470	C	3450	C	3450	C	3490	C	3510	C	3510	C	3520	C	3290	C	3290	C	3350	C	3350	C
110NBGP0016	Orange Grove off-ramp	Orange Grove on-ramp	2410	B	2360	B	2360	B	2400	B	2560	B	2560	B	2590	B	2490	B	2470	B	2500	B	2500	B
110NBGP0017	Orange Grove on-ramp	Fair Oaks off-ramp	2490	C	2490	C	2460	B	2510	B	2640	C	2640	C	2670	C	2570	C	2550	C	2580	C	2580	C
110NBGP0018	Fair Oaks off-ramp	North of Fair Oaks off-ramp	1680	A	1690	A	1670	A	1660	A	1530	A	1530	A	1530	A	1270	A	1260	A	1330	A	1330	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-82

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Southbound SR 110
SR 710 North Study, Los Angeles County, California

Southbound State Route 110 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110SBGP0001	North of Fair Oaks off-ramp	Fair Oaks off-ramp	1430	A	1580	A	1570	A	1560	A	1340	A	1310	A	1260	A	960	A	940	A	990	A		
110SBGP0002	Fair Oaks off-ramp	NB Fair Oaks on-ramp	1310	A	1190	A	1190	A	1180	A	1090	A	1090	A	1070	A	900	A	890	A	930	A		
110SBGP0002A	NB Fair Oaks on-ramp	Fair Oaks on-ramp			1600	B	1590	B	1650	B	1780	B	1790	B	1770	B	1680	B	1680	B	1700	B		
110SBGP0003	Fair Oaks on-ramp	Orange Grove off-ramp	1940	B	1900	B	1880	B	1950	B	2030	B	2020	B	2010	B	1880	B	1870	B	1890	B		
110SBGP0004	Orange Grove off-ramp	Orange Grove on-ramp	1860	B	1820	B	1810	B	1880	B	1970	B	1970	B	1960	B	1800	B	1790	B	1820	B		
110SBGP0005	Orange Grove on-ramp	York off-ramp	3060	C	3020	C	3010	C	3080	C	3160	C	3160	C	3130	C	2960	C	2950	C	2980	C		
110SBGP0006	York off-ramp	York on-ramp	2930	B	2880	B	2870	B	2950	B	2980	B	2980	B	2960	B	2760	B	2750	B	2790	B		
110SBGP0007	York on-ramp	Marmion/Avenue 64 on-ramp	3540	C	3490	C	3480	C	3560	C	3570	C	3540	C	3540	C	3210	C	3200	C	3270	C		
110SBGP0008	Marmion/Avenue 64 on-ramp	Avenue 60 off-ramp	4450	D	4390	D	4370	D	4460	D	4410	D	4410	D	4400	D	4080	D	4060	D	4150	D		
110SBGP0009	Avenue 60 off-ramp	Avenue 60 on-ramp	4180	C	4130	C	4110	C	4210	C	4150	C	4150	C	4140	C	3810	C	3800	C	3890	C		
110SBGP0010	Avenue 60 on-ramp	Via Marisol off-ramp	5020	D	4930	D	4920	D	5070	D	5000	D	5000	D	4990	D	4680	D	4670	D	4740	D		
110SBGP0011	Via Marisol off-ramp	Via Marisol on-ramp	4760	C	4670	C	4660	C	4810	C	4730	C	4730	C	4720	C	4410	C	4410	C	4480	C		
110SBGP0012	Via Marisol on-ramp	Avenue 52 off-ramp	5410	D	5340	D	5320	D	5470	D	5360	D	5380	D	5380	D	5050	D	5040	D	5110	D		
110SBGP0013	Avenue 52 off-ramp	Avenue 52 on-ramp	5170	D	5080	D	5070	D	5230	D	5110	D	5130	D	5130	D	4780	C	4770	C	4850	C		
110SBGP0014	Avenue 52 on-ramp	Avenue 43 off-ramp	6440	F	6380	F	6360	F	6520	F	6380	F	6440	F	6420	F	6100	E	6090	E	6160	E		
110SBGP0015	Avenue 43 off-ramp	Avenue 43 on-ramp	6120	E	6070	E	6060	E	6190	E	6090	E	6140	E	6130	E	5850	D	5850	D	5920	D		
110SBGP0016	Avenue 43 on-ramp	I-5 off-ramp	7110	F	7090	F	7090	F	7220	F	7090	F	7170	F	7150	F	6910	F	6880	F	6960	F		
110SBGP0017	I-5 off-ramp	Avenue 26 off-ramp	5090	D	5080	D	5060	D	5100	D	5100	D	5130	D	5090	D	5000	D	5020	D	5040	D		
110SBGP0018	Avenue 26 off-ramp	Figueroa on-ramp	4840	C	4820	C	4800	C	4840	C	4850	C	4870	C	4840	C	4740	C	4760	C	4780	C		
110SBGP0019	Figueroa on-ramp	I-5/Riverside on-ramp	5890	D	5890	D	5870	D	5910	D	5910	D	5900	D	5890	D	5800	D	5820	D	5840	D		
110SBGP0020	I-5/Riverside on-ramp	South of I-5/Riverside on-ramp	11,100	E	11,130	E	11,160	E	11,220	E	11,200	E	11,200	E	11,210	E	11,180	E	11,160	E	11,190	E		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-83

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Southbound SR 110
SR 710 North Study, Los Angeles County, California

Southbound State Route 110 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
110SBGP0001	North of Fair Oaks off-ramp	Fair Oaks off-ramp	1640	A	1650	A	1660	A	1620	A	1430	A	1370	A	1380	A	1210	A	1270	A	1320	A		
110SBGP0002	Fair Oaks off-ramp	NB Fair Oaks on-ramp	1520	B	1440	A	1440	A	1430	A	1390	A	1360	A	1360	A	1220	A	1210	A	1260	A		
110SBGP0002A	NB Fair Oaks on-ramp	Fair Oaks on-ramp			1900	B	1880	B	1910	B	1980	B	1950	B	1960	B	1830	B	1830	B	1860	B		
110SBGP0003	Fair Oaks on-ramp	Orange Grove off-ramp	2000	B	2100	B	2090	B	2110	B	2130	B	2090	B	2100	B	1950	B	1950	B	1980	B		
110SBGP0004	Orange Grove off-ramp	Orange Grove on-ramp	1920	B	2010	B	2000	B	2030	B	2060	B	2020	B	2030	B	1880	B	1870	B	1900	B		
110SBGP0005	Orange Grove on-ramp	York off-ramp	2710	C	2780	C	2790	C	2810	C	2850	C	2800	C	2810	C	2670	C	2670	C	2700	C		
110SBGP0006	York off-ramp	York on-ramp	2590	B	2610	B	2610	B	2640	B	2640	B	2600	B	2610	B	2480	B	2470	B	2500	B		
110SBGP0007	York on-ramp	Marmion/Avenue 64 on-ramp	2790	B	2800	B	2800	B	2830	B	2790	B	2740	B	2750	B	2580	B	2570	B	2600	B		
110SBGP0008	Marmion/Avenue 64 on-ramp	Avenue 60 off-ramp	3250	C	3250	C	3260	C	3310	C	3210	C	3170	C	3170	C	3010	C	3000	C	3040	C		
110SBGP0009	Avenue 60 off-ramp	Avenue 60 on-ramp	3010	B	3010	B	3010	B	3090	B	3000	B	2970	B	2980	B	2800	B	2800	B	2830	B		
110SBGP0010	Avenue 60 on-ramp	Via Marisol off-ramp	3160	C	3150	C	3150	C	3230	C	3180	C	3130	C	3150	C	3000	C	2980	C	3030	C		
110SBGP0011	Via Marisol off-ramp	Via Marisol on-ramp	2830	B	2820	B	2810	B	2900	B	2830	B	2790	B	2800	B	2650	B	2640	B	2680	B		
110SBGP0012	Via Marisol on-ramp	Avenue 52 off-ramp	3090	C	3070	C	3070	C	3180	C	3070	C	3010	C	3040	C	2890	C	2870	C	2920	C		
110SBGP0013	Avenue 52 off-ramp	Avenue 52 on-ramp	2830	B	2800	B	2800	B	2910	B	2790	B	2730	B	2760	B	2610	B	2590	B	2640	B		
110SBGP0014	Avenue 52 on-ramp	Avenue 43 off-ramp	3300	C	3260	C	3250	C	3370	C	3270	C	3210	C	3240	C	3110	C	3090	F	3130	C		
110SBGP0015	Avenue 43 off-ramp	Avenue 43 on-ramp	3160	B	3120	B	3100	B	3230	B	3130	B	3060	B	3100	B	2970	B	2950	B	2990	B		
110SBGP0016	Avenue 43 on-ramp	I-5 off-ramp	3450	C	3420	C	3390	C	3540	C	3440	C	3370	C	3430	C	3320	C	3290	C	3330	C		
110SBGP0017	I-5 off-ramp	Avenue 26 off-ramp	2290	B	2300	B	2300	B	2330	B	2320	B	2280	B	2310	B	2250	B	2250	B	2270	B		
110SBGP0018	Avenue 26 off-ramp	Figueroa on-ramp	2170	A	2180	B	2190	B	2210	B	2200	B	2170	A	2200	B	2130	A	2130	A	2160	A		
110SBGP0019	Figueroa on-ramp	I-5/Riverside on-ramp	2680	B	2690	B	2700	B	2720	B	2720	B	2650	B	2710	B	2650	B	2640	B	2670	B		
110SBGP0020	I-5/Riverside on-ramp	South of I-5/Riverside on-ramp	5350	B	5360	B	5330	B	5430	B	5400	B	5310	B	5370	B	5380	B	5360	B	5370	B		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-84

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound SR 134
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 134 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	5230	C	5270	C	5280	C	5200	C	5330	C	5380	C	5340	C	5290	C	5330	C	5330	C	5330	C
134EBGP0002	SB I-5 off-ramp	SB I-5 on-ramp	3040	B	3020	B	3030	B	3020	B	2980	B	3010	B	2990	B	2930	B	2930	B	2920	B	2920	B
134EBGP0003	SB I-5 on-ramp	NB I-5/Zoo on-ramp	5830	C	5840	C	5820	C	5840	C	5880	C	5890	C	5870	C	5950	C	5900	C	5940	C	5940	C
134EBGP0004	NB I-5/Zoo on-ramp	San Fernando off-ramp	6720	C	6720	C	6710	C	6810	C	6740	C	6760	C	6740	C	6680	C	6670	C	6690	C	6690	C
134EBGP0005	San Fernando off-ramp	San Fernando on-ramp	6150	C	6160	C	6150	C	6240	C	6180	C	6200	C	6190	C	6140	C	6110	C	6140	C	6140	C
134EBGP0006	San Fernando on-ramp	Pacific off-ramp	6610	C	6610	C	6600	C	6690	C	6640	C	6650	C	6650	C	6610	C	6590	C	6610	C	6610	C
134EBGP0007	Pacific off-ramp	Central/Brand off-ramp	6110	D	6100	D	6090	D	6170	D	6140	D	6180	D	6170	D	6130	D	6100	D	6140	D	6140	D
134EBGP0008	Central/Brand off-ramp	Pacific on-ramp	5270	C	5260	C	5230	C	5300	C	5330	C	5360	C	5360	C	5300	C	5280	C	5310	C	5310	C
134EBGP0009	Pacific on-ramp	Brand on-ramp	5940	C	5940	C	5910	C	5990	C	6020	C	6050	C	6050	C	6000	C	5990	C	6000	C	6000	C
134EBGP0010	Brand on-ramp	Glendale off-ramp	7080	C	7070	C	7050	C	7120	C	7180	C	7220	C	7210	C	7170	C	7150	C	7170	C	7170	C
134EBGP0011	Glendale off-ramp	SB Glendale on-ramp	6290	C	6280	C	6270	C	6320	C	6380	C	6430	C	6410	C	6390	C	6360	C	6380	C	6380	C
134EBGP0012	SB Glendale on-ramp	NB Glendale on-ramp	6450	C	6470	C	6470	C	6500	C	6580	C	6630	C	6630	C	6590	C	6580	C	6590	C	6590	C
134EBGP0013	NB Glendale on-ramp	SR 2 off-ramp	7000	C	7020	C	7020	C	7040	C	7140	C	7190	C	7170	C	7170	C	7160	C	7150	C	7150	C
134EBGP0014	SR 2 off-ramp	Harvey off-ramp	5080	C	5120	C	5120	C	5160	C	5190	D	5230	D	5220	D	5330	D	5360	D	5310	D	5310	D
134EBGP0015	Harvey off-ramp	Harvey on-ramp	4450	B	4460	B	4460	B	4500	B	4520	B	4550	B	4560	B	4650	B	4670	B	4630	B	4630	B
134EBGP0016	Harvey on-ramp	SB SR 2 on-ramp	4920	C	4930	C	4930	C	4970	C	5000	C	5030	C	5030	C	5140	C	5180	C	5130	C	5130	C
134EBGP0017	SB SR 2 on-ramp	NB SR 2 on-ramp	5240	C	5250	C	5250	C	5290	C	5350	C	5380	C	5380	C	5530	C	5570	C	5520	C	5520	C
134EBGP0018	NB SR 2 on-ramp	Figueroa off-ramp	6430	D	6430	D	6430	D	6480	D	6510	D	6540	D	6540	D	6680	D	6720	D	6650	D	6650	D
134EBGP0019	Figueroa off-ramp	Figueroa /Colorado on-ramp	5800	C	5800	C	5800	C	5860	C	5890	C	5920	C	5910	C	6060	C	6100	C	6030	C	6030	C
134EBGP0020	Figueroa /Colorado on-ramp	Linda Vista/San Rafael off-ramp	6270	D	6290	D	6270	D	6330	D	6400	D	6440	D	6410	D	6670	D	6720	D	6630	D	6630	D
134EBGP0021	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	5760	C	5780	C	5770	C	5820	C	5890	C	5940	C	5910	C	6160	C	6210	C	6130	C	6130	C
134EBGP0022	Linda Vista/San Rafael on-ramp	Colorado/Orange Grove off-ramp	6690	C	6690	C	6680	C	6740	C	6870	D	6890	D	6860	D	7160	D	7190	D	7120	D	7120	D
134EBGP0023	Colorado/Orange Grove off-ramp	I-210 off-ramp	6360	C	6370	C	6350	C	6410	C	5990	C	5990	C	5970	C	6270	C	6310	C	6230	C	6230	C
134EBGP0024	I-210 off-ramp	Orange Grove on-ramp	5870	C	5840	C	5840	C	5890	C	5890	C	5910	C	5910	C	5740	C	5690	C	5770	C	5770	C
134EBGP0025	Orange Grove on-ramp	Fair Oaks/Marengo off-ramp	6270	C	6250	C	6230	C	6290	C	6350	C	6360	C	6380	C	6190	C	6140	C	6200	C	6200	C
134EBGP0026	Fair Oaks/Marengo off-ramp	NB SR 710 on-ramp	5380	C	5370	C	5340	C	5390	C	5440	C	5460	C	5470	C	5260	C	5210	C	5280	C	5280	C
134EBGP0027	NB SR 710 on-ramp	East of NB SR 710 on-ramp	5750	B	5690	B	5660	B	5740	B	5960	C	6000	C	5990	C	6250	C	6180	C	6210	C	6210	C

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-85

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound SR 134
 SR 710 North Study, Los Angeles County, California

Eastbound State Route 134 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134EBGP0001	West of SB I-5 off-ramp	SB I-5 off-ramp	6300	C	6310	C	6310	C	6330	C	6390	C	6390	C	6390	C	6360	C	6360	C	6360	C	6360	C
134EBGP0002	SB I-5 off-ramp	SB I-5 on-ramp	3580	C	3590	C	3570	C	3580	C	3510	B	3530	B	3530	B	3430	B	3410	B	3410	B	3410	B
134EBGP0003	SB I-5 on-ramp	NB I-5/Zoo on-ramp	7120	D	7140	D	7130	D	7140	D	7150	D	7170	D	7170	D	7130	D	7110	D	7120	D	7120	D
134EBGP0004	NB I-5/Zoo on-ramp	San Fernando off-ramp	8630	D	8640	D	8640	D	8610	D	8640	D	8650	D	8630	D	8540	D	8530	D	8560	D	8560	D
134EBGP0005	San Fernando off-ramp	San Fernando on-ramp	8090	E	8090	E	8090	E	8070	E	8130	E	8140	E	8130	E	8070	E	8050	E	8080	E	8080	E
134EBGP0006	San Fernando on-ramp	Pacific off-ramp	8600	D	8610	D	8610	D	8580	D	8650	D	8650	D	8640	D	8620	D	8610	D	8620	D	8620	D
134EBGP0007	Pacific off-ramp	Central/Brand off-ramp	7970	E	7980	E	7980	E	7950	E	8020	E	8020	E	8020	E	7990	E	7970	E	7990	E	7990	E
134EBGP0008	Central/Brand off-ramp	Pacific on-ramp	6840	D	6850	D	6840	D	6820	D	6890	D	6900	D	6890	D	6850	D	6840	D	6850	D	6850	D
134EBGP0009	Pacific on-ramp	Brand on-ramp	7660	D	7670	D	7670	D	7650	D	7730	D	7750	D	7730	D	7700	D	7690	D	7700	D	7700	D
134EBGP0010	Brand on-ramp	Glendale off-ramp	8920	D	8930	D	8930	D	8900	D	8990	D	9000	D	8990	D	8960	D	8960	D	8960	D	8960	D
134EBGP0011	Glendale off-ramp	SB Glendale on-ramp	7830	D	7850	D	7850	D	7810	D	7910	E	7920	E	7920	E	7870	D	7870	D	7870	D	7870	D
134EBGP0012	SB Glendale on-ramp	NB Glendale on-ramp	8030	C	8040	C	8040	C	8010	C	8130	D	8130	D	8130	D	8080	C	8060	C	8090	C	8090	C
134EBGP0013	NB Glendale on-ramp	SR 2 off-ramp	8650	F	8680	F	8680	F	8640	F	8790	F	8800	F	8790	F	8750	F	8730	F	8750	F	8750	F
134EBGP0014	SR 2 off-ramp	Harvey off-ramp	6260	D	6300	D	6300	D	6280	D	6360	D	6380	D	6370	D	6450	D	6490	D	6430	D	6430	D
134EBGP0015	Harvey off-ramp	Harvey on-ramp	5400	C	5410	C	5410	C	5390	C	5480	C	5500	C	5480	C	5550	C	5590	C	5540	C	5540	C
134EBGP0016	Harvey on-ramp	SB SR 2 on-ramp	5970	C	5980	C	5980	C	5960	C	6030	C	6040	C	6030	C	6120	C	6160	C	6100	C	6100	C
134EBGP0017	SB SR 2 on-ramp	NB SR 2 on-ramp	6330	C	6340	C	6340	C	6320	C	6390	C	6420	C	6410	C	6540	D	6570	D	6530	D	6530	D
134EBGP0018	NB SR 2 on-ramp	Figueroa off-ramp	7690	E	7690	E	7690	E	7680	E	7760	E	7770	E	7770	E	7840	E	7840	E	7830	E	7830	E
134EBGP0019	Figueroa off-ramp	Figueroa /Colorado on-ramp	6820	D	6830	D	6830	D	6860	D	6930	D	6950	D	6950	D	7030	D	7030	D	7040	D	7040	D
134EBGP0020	Figueroa /Colorado on-ramp	Linda Vista/San Rafael off-ramp	7390	E	7410	E	7420	E	7410	E	7550	E	7590	E	7570	E	7750	E	7760	E	7740	E	7740	E
134EBGP0021	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	6710	D	6720	D	6730	D	6720	D	6880	D	6920	D	6900	D	7070	D	7100	D	7070	D	7070	D
134EBGP0022	Linda Vista/San Rafael on-ramp	Colorado/Orange Grove off-ramp	7670	D	7660	D	7680	D	7680	D	7930	D	7900	D	7900	D	8060	D	8060	D	8060	D	8060	D
134EBGP0023	Colorado/Orange Grove off-ramp	I-210 off-ramp	7200	C	7210	C	7220	C	7220	C	7010	C	6900	C	6900	C	7180	C	7190	C	7170	C	7170	C
134EBGP0024	I-210 off-ramp	Orange Grove on-ramp	6580	D	6570	D	6580	D	6560	D	6620	D	6620	D	6620	D	6310	C	6280	C	6380	C	6380	C
134EBGP0025	Orange Grove on-ramp	Fair Oaks/Marengo off-ramp	6900	C	6900	C	6900	C	6890	C	6970	C	6950	C	6960	C	6680	C	6640	C	6760	C	6760	C
134EBGP0026	Fair Oaks/Marengo off-ramp	NB SR 710 on-ramp	5860	C	5850	C	5850	C	5840	C	5920	C	5910	C	5910	C	5640	C	5610	C	5730	C	5730	C
134EBGP0027	NB SR 710 on-ramp	East of NB SR 710 on-ramp	6250	C	6230	C	6220	C	6240	C	6140	C	6130	C	6130	C	6440	C	6440	C	6400	C	6400	C

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-86

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound SR 134
 SR 710 North Study, Los Angeles County, California

Westbound State Route 134 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134WBG0001	East of SR 710 off-ramp	SR 710 off-ramp	6540	C	6550	C	6550	C	6590	C	6500	C	5990	C	5990	C	6370	C	6340	C	6340	C	6340	C
134WBG0002	SR 710 off-ramp	Fair Oaks on-ramp	5370	C	5390	C	5390	C	5430	C	5660	C	5700	C	5690	C	5400	C	5390	C	5490	C	5490	C
134WBG0003	Fair Oaks on-ramp	Orange Grove off-ramp	6100	C	6110	C	6110	C	6150	C	6410	C	6440	C	6440	C	6140	C	6130	C	6230	C	6230	C
134WBG0004	Orange Grove off-ramp	I-210/SR 710 on-ramp	5790	C	5780	C	5770	C	5820	C	5850	C	5900	C	5900	C	5690	C	5670	C	5750	C	5750	C
134WBG0005	I-210/SR 710 on-ramp	Colorado/Orange Grove on-ramp	7250	C	7240	C	7240	C	7300	C	6850	C	6930	C	6910	C	7050	C	7050	C	7040	C	7040	C
134WBG0006	Colorado/Orange Grove on-ramp	Linda Vista/San Rafael off-ramp	7870	D	7850	D	7860	D	7920	D	7790	D	7830	D	7840	D	7950	D	7980	D	7960	D	7960	D
134WBG0007	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	7560	D	7550	D	7550	D	7610	D	7430	D	7480	D	7480	D	7610	D	7620	D	7610	D	7610	D
134WBG0008	Linda Vista/San Rafael on-ramp	Figueroa/Colorado off-ramp	7770	E	7750	E	7760	E	7810	E	7810	E	7810	E	7810	E	7930	E	7960	E	7910	E	7910	E
134WBG0009	Figueroa/Colorado off-ramp	Figueroa on-ramp	6980	D	6950	D	6970	D	7000	D	6970	D	6970	D	6960	D	7060	D	7090	D	7040	D	7040	D
134WBG0010	Figueroa on-ramp	SR 2 off-ramp	7480	D	7450	D	7460	D	7490	D	7500	D	7510	D	7500	D	7580	D	7600	D	7570	D	7570	D
134WBG0011	SR 2 off-ramp	Harvey off-ramp	5770	D	5750	D	5760	D	5770	D	5770	D	5790	D	5770	D	5880	D	5920	D	5880	D	5880	D
134WBG0012	Harvey off-ramp	NB SR 2 on-ramp	5300	C	5290	C	5290	C	5310	C	5300	C	5320	C	5300	C	5390	C	5430	C	5390	C	5390	C
134WBG0013	NB SR 2 on-ramp	Harvey on-ramp	6130	C	6100	C	6110	C	6080	C	6240	C	6260	C	6240	C	6220	C	6220	C	6230	C	6230	C
134WBG0014	Harvey on-ramp	SB SR 2 on-ramp	7140	D	7150	D	7160	D	7140	D	7280	D	7300	D	7280	D	7250	D	7250	D	7270	D	7270	D
134WBG0015	SB SR 2 on-ramp	Glendale off-ramp	8810	D	8820	D	8830	D	8820	D	8960	D	8980	D	8950	D	8950	D	8950	D	8960	D	8960	D
134WBG0016	Glendale off-ramp	Glendale on-ramp	8270	E	8280	E	8280	E	8270	E	8400	E	8430	E	8390	E	8380	E	8380	E	8390	E	8390	E
134WBG0017	Glendale on-ramp	Brand/Central off-ramp	9260	E	9260	E	9270	E	9260	E	9370	E	9400	E	9370	E	9370	E	9360	E	9370	E	9370	E
134WBG0018	Brand/Central off-ramp	Pacific off-ramp	8260	E	8250	E	8240	E	8280	E	8280	E	8300	E	8270	E	8240	E	8240	E	8240	E	8240	E
134WBG0019	Pacific off-ramp	Central on-ramp	7790	D	7780	D	7770	D	7790	D	7790	D	7790	D	7780	D	7740	D	7730	D	7740	D	7740	D
134WBG0020	Central on-ramp	Pacific on-ramp	8670	F	8660	F	8650	F	8720	F	8670	F	8660	F	8650	F	8630	F	8610	F	8620	F	8620	F
134WBG0021	Pacific on-ramp	San Fernando off-ramp	9360	E	9350	E	9340	E	9420	E	9360	E	9350	E	9340	E	9310	E	9290	E	9310	E	9310	E
134WBG0022	San Fernando off-ramp	I-5 off-ramp	8810	D	8800	D	8790	D	8870	D	8800	D	8790	D	8780	D	8750	D	8730	D	8740	D	8740	D
134WBG0023	I-5 off-ramp	San Fernando on-ramp	4240	E	4240	E	4240	E	4360	E	4230	E	4230	E	4210	E	4140	E	4120	E	4150	E	4150	E
134WBG0024	San Fernando on-ramp	NB I-5 on-ramp	4640	F	4640	F	4630	F	4750	F	4620	F	4610	F	4590	F	4520	F	4510	F	4530	F	4530	F
134WBG0025	NB I-5 on-ramp	West of NB I-5 on-ramp	7570	D	7560	D	7570	D	7610	D	7670	D	7670	D	7680	D	7710	D	7700	D	7700	D	7700	D

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-87

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound SR 134
 SR 710 North Study, Los Angeles County, California

Westbound State Route 134 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
134WBG0001	East of SR 710 off-ramp	SR 710 off-ramp	6790	C	6770	C	6790	C	6830	C	6500	C	6530	C	6570	C	6280	C	6210	C	6350	C		
134WBG0002	SR 710 off-ramp	Fair Oaks on-ramp	5810	C	5800	C	5810	C	5870	C	6030	C	6100	C	6120	C	5730	C	5660	C	5860	C		
134WBG0003	Fair Oaks on-ramp	Orange Grove off-ramp	6530	C	6520	C	6530	C	6590	C	6790	C	6840	C	6860	C	6480	C	6410	C	6600	C		
134WBG0004	Orange Grove off-ramp	I-210/SR 710 on-ramp	6120	C	6120	C	6130	C	6190	C	6200	C	6260	C	6260	C	5870	C	5800	C	6010	C		
134WBG0005	I-210/SR 710 on-ramp	Colorado/Orange Grove on-ramp	7390	C	7420	C	7400	C	7470	C	7280	C	7270	C	7360	C	7690	C	7810	C	7540	C		
134WBG0006	Colorado/Orange Grove on-ramp	Linda Vista/San Rafael off-ramp	8070	D	8100	D	8080	D	8150	D	8180	D	8130	D	8240	D	8550	D	8680	D	8410	D		
134WBG0007	Linda Vista/San Rafael off-ramp	Linda Vista/San Rafael on-ramp	7570	D	7610	D	7590	D	7660	D	7620	D	7580	D	7690	D	7990	E	8100	E	7860	D		
134WBG0008	Linda Vista/San Rafael on-ramp	Figueroa/Colorado off-ramp	7840	E	7880	E	7860	E	7930	E	8040	E	8020	E	8110	E	8420	F	8490	E	8300	E		
134WBG0009	Figueroa/Colorado off-ramp	Figueroa on-ramp	6590	D	6620	D	6610	D	6670	D	6800	D	6780	D	6860	D	7070	D	7120	D	6960	D		
134WBG0010	Figueroa on-ramp	SR 2 off-ramp	7040	D	7010	D	7000	D	7080	D	7200	D	7180	D	7200	D	7430	D	7530	D	7350	D		
134WBG0011	SR 2 off-ramp	Harvey off-ramp	5610	D	5520	D	5530	D	5560	D	5660	D	5630	D	5660	D	5840	D	5930	D	5810	D		
134WBG0012	Harvey off-ramp	NB SR 2 on-ramp	4870	C	4770	C	4780	C	4810	C	4960	C	4920	C	4960	C	5150	C	5220	C	5130	C		
134WBG0013	NB SR 2 on-ramp	Harvey on-ramp	5500	C	5430	C	5420	C	5460	C	5700	C	5680	C	5710	C	5950	C	5940	C	5900	C		
134WBG0014	Harvey on-ramp	SB SR 2 on-ramp	6250	C	6160	C	6160	C	6190	C	6420	C	6410	C	6430	C	6650	D	6650	D	6600	D		
134WBG0015	SB SR 2 on-ramp	Glendale off-ramp	7560	F	7480	F	7470	F	7510	F	7720	F	7720	F	7730	F	7950	F	7940	F	7890	F		
134WBG0016	Glendale off-ramp	Glendale on-ramp	6530	D	6440	C	6440	C	6470	C	6640	D	6640	D	6650	D	6850	D	6840	D	6800	D		
134WBG0017	Glendale on-ramp	Brand/Central off-ramp	7570	D	7580	F	7610	F	7630	D	7780	F	7740	F	7760	F	8050	F	8050	F	7920	F		
134WBG0018	Brand/Central off-ramp	Pacific off-ramp	6250	D	6240	D	6280	D	6310	D	6420	D	6380	D	6390	D	6590	D	6610	D	6490	D		
134WBG0019	Pacific off-ramp	Central on-ramp	5700	C	5690	C	5740	C	5760	C	5870	C	5820	C	5840	C	6010	C	6040	C	5920	C		
134WBG0020	Central on-ramp	Pacific on-ramp	7350	D	7290	D	7330	D	7370	D	7450	D	7420	D	7500	D	7570	E	7620	E	7540	E		
134WBG0021	Pacific on-ramp	San Fernando off-ramp	8040	D	7980	D	8020	D	8060	D	8130	D	8110	D	8180	D	8250	D	8300	D	8220	D		
134WBG0022	San Fernando off-ramp	I-5 off-ramp	7620	C	7570	C	7600	C	7640	C	7720	C	7700	C	7770	C	7820	C	7860	C	7790	C		
134WBG0023	I-5 off-ramp	San Fernando on-ramp	3540	D	3540	D	3550	D	3560	D	3550	D	3550	D	3550	D	3570	D	3580	D	3540	D		
134WBG0024	San Fernando on-ramp	NB I-5 on-ramp	3880	D	3880	D	3890	D	3900	D	3890	D	3890	D	3890	D	3910	D	3930	D	3880	D		
134WBG0025	NB I-5 on-ramp	West of NB I-5 on-ramp	5940	C	5920	C	5940	C	5940	C	6010	C	6000	C	6000	C	6150	C	6140	C	6110	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-88

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Northbound I-5
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 5 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5NBGP0001	South of Eastern off-ramp	Eastern off-ramp	8640	D	8620	D	8650	D	8700	D	8690	D	8710	D	8670	E	8750	D	8680	D	8650	D	8650	D
5NBGP0002	Eastern off-ramp	I-710 off-ramp	8470	D	8500	D	8520	D	8550	D	8510	D	8530	D	8480	D	8490	D	8450	D	8470	D	8470	D
5NBGP0003	I-710 off-ramp	I-710 on-ramp	7370	D	7360	D	7370	D	7500	D	7250	D	7240	D	7230	D	7230	D	7150	D	7180	D	7180	D
5NBGP0004	I-710 on-ramp	Downey on-ramp	10,850	E	10,870	E	10,890	E	11,050	F	10,790	E	10,780	E	10,780	E	10,810	E	10,690	E	10,750	E	10,750	E
5NBGP0005	Downey on-ramp	Indiana off-ramp	11,160	F	11,160	F	11,180	F	11,320	F	11,140	F	11,090	F	11,120	F	11,170	F	11,040	F	11,100	F	11,100	F
5NBGP0006	Indiana off-ramp	Indiana on-ramp	10,890	E	10,880	E	10,880	E	10,990	F	10,820	E	10,820	E	10,840	E	10,870	E	10,730	E	10,820	E	10,820	E
5NBGP0007	Indiana on-ramp	Calzona off-ramp	11,160	F	11,140	F	11,150	F	11,260	F	11,090	F	11,120	F	11,120	F	11,150	F	11,030	F	11,090	F	11,090	F
5NBGP0008	Calzona off-ramp	Calzona on-ramp	11,110	F	11,090	F	11,090	F	11,200	F	11,030	F	11,060	F	11,060	F	11,100	F	10,970	F	11,040	F	11,040	F
5NBGP0009	Calzona on-ramp	Grand Vista off-ramp	11,260	F	11,220	F	11,240	F	11,350	F	11,180	F	11,200	F	11,210	F	11,260	F	11,140	F	11,200	F	11,200	F
5NBGP0010	Grand Vista off-ramp	US 101 NB off-ramp	11,130	F	11,120	F	11,130	F	11,240	F	11,070	F	11,090	F	11,110	F	11,150	F	11,030	F	11,090	F	11,090	F
5NBGP0011	US 101 NB off-ramp	I-10 WB off-ramp	7340	D	7360	D	7360	D	7430	D	7330	D	7320	D	7350	D	7420	D	7300	D	7340	D	7340	D
5NBGP0012	I-10 WB off-ramp	Soto off-ramp	4480	F	4510	F	4540	F	4500	F	4510	F	4470	F	4510	F	4560	F	4470	F	4510	F	4510	F
5NBGP0013	Soto off-ramp	SR 60 WB on-ramp	4250	E	4340	E	4340	E	4310	E	4260	E	4250	E	4280	E	4290	E	4190	E	4280	E	4280	E
5NBGP0014	SR 60 WB on-ramp	Seventh off-ramp	5680	F	5690	F	5660	F	5720	F	5650	F	5640	F	5640	F	5630	F	5520	F	5610	F	5610	F
5NBGP0015	Seventh off-ramp	Seventh on-ramp	5540	F	5520	F	5520	F	5560	F	5470	F	5480	F	5460	F	5450	F	5340	F	5440	F	5440	F
5NBGP0016	Seventh on-ramp	I-10 EB on-ramp	6080	F	6070	F	6100	F	6110	F	6060	F	6010	F	6040	F	6060	F	5930	F	6030	F	6030	F
5NBGP0017	I-10 EB on-ramp	Fourth off-ramp	10,260	F	10,250	F	10,310	F	10,330	F	10,310	F	10,290	F	10,310	E	10,400	F	10,260	F	10,360	F	10,360	F
5NBGP0018	Fourth off-ramp	Fourth on-ramp	10,080	E	10,070	E	10,140	E	10,150	E	10,140	E	10,120	E	10,140	E	10,230	E	10,090	E	10,200	E	10,200	E
5NBGP0019	Fourth on-ramp	Cesar Chavez off-ramp	10,650	F	10,660	F	10,730	F	10,740	F	10,710	F	10,710	F	10,700	F	10,790	F	10,670	F	10,780	F	10,780	F
5NBGP0020	Cesar Chavez off-ramp	I-10 EB off-ramp	10,280	E	10,290	E	10,350	E	10,380	E	10,340	E	10,330	E	10,330	E	10,450	E	10,310	E	10,420	E	10,420	E
5NBGP0021	I-10 EB off-ramp	State on-ramp	8120	E	8130	E	8170	E	8230	E	8130	E	8080	E	8120	E	7980	E	8120	E	8120	E	8120	E
5NBGP0022	State on-ramp	I-10 WB on-ramp	8390	F	8460	F	8470	F	8560	F	8460	F	8390	F	8460	F	8450	F	8310	F	8450	F	8450	F
5NBGP0023	I-10 WB on-ramp	Marengo on-ramp	10,880	E	10,830	E	10,830	E	10,810	E	10,580	E	10,570	E	10,630	E	10,300	E	10,220	E	10,330	E	10,330	E
5NBGP0024	Marengo on-ramp	Main Street off-ramp	11,220	F	11,160	F	11,160	F	11,150	F	10,920	F	10,900	F	10,960	F	10,710	F	10,620	F	10,720	F	10,720	F
5NBGP0025	Main Street off-ramp	Broadway off-ramp	10,820	E	10,740	E	10,740	E	10,720	E	10,490	E	10,480	E	10,520	E	10,270	E	10,150	E	10,280	E	10,280	E
5NBGP0026	Broadway off-ramp	SR 110 NB off-ramp	10,060	F	10,050	F	10,030	F	10,050	F	9920	F	9880	F	9950	F	9680	F	9600	F	9710	F	9710	F
5NBGP0027	SR 110 NB off-ramp	Pasadena/Broadway on-ramp	8790	F	8820	F	8790	F	8800	F	8740	F	8720	E	8780	F	8640	E	8540	E	8640	E	8640	E
5NBGP0028	Pasadena/Broadway on-ramp	SR 110 SB on-ramp	9170	F	9150	F	9160	F	9160	F	9120	F	9080	F	9130	F	9070	F	8930	F	9020	F	9020	F
5NBGP0029	SR 110 SB on-ramp	Riverside/SR 110 NB on-ramp	9460	F	9440	F	9450	F	9450	F	9410	F	9380	F	9430	F	9370	F	9240	F	9320	F	9320	F
5NBGP0030	Riverside/SR 110 NB on-ramp	Stadium Way off-ramp	11,550	F	11,570	F	11,550	F	11,500	F	11,560	F	11,520	F	11,550	F	11,510	F	11,390	F	11,460	F	11,460	F
5NBGP0031	Stadium Way off-ramp	Stadium Way on-ramp	11,320	F	11,330	F	11,320	F	11,240	F	11,260	F	11,220	F	11,250	F	11,170	F	11,050	F	11,130	F	11,130	F
5NBGP0032	Stadium Way on-ramp	SR 2 NB off-ramp	11,470	F	11,420	F	11,450	F	11,360	F	11,320	F	11,280	F	11,310	F	11,200	F	11,070	F	11,150	F	11,150	F
5NBGP0033	SR 2 NB off-ramp	SR 2 SB off-ramp	9590	F	9610	F	9600	F	9500	F	9770	F	9730	F	9760	F	9840	F	9750	F	9760	F	9760	F
5NBGP0034	SR 2 SB off-ramp	SR 2 on-ramp	9730	F	9750	F	9740	F	9640	F	9910	F	9870	F	9900	F	9980	F	9890	F	9900	F	9900	F
5NBGP0035	SR 2 on-ramp	Fletcher on-ramp	10,470	E	10,430	E	10,460	E	10,380	E	10,550	E	10,530	E	10,590	E	10,640	E	10,550	E	10,580	E	10,580	E
5NBGP0036	Fletcher on-ramp	Glendale off-ramp	10,830	F	10,790	F	10,810	F	10,750	F	10,900	F	10,880	F	10,940	F	10,980	F	10,890	F	10,920	F	10,920	F
5NBGP0037	Glendale off-ramp	Glendale on-ramp	9850	F	9820	F	9820	F	9790	F	9910	F	9900	F	9960	F	9980	F	9910	F	9950	F	9950	F
5NBGP0038	Glendale on-ramp	Los Feliz off-ramp	10,070	F	10,040	F	10,040	F	10,000	F	10,120	F	10,110	F	10,180	F	10,200	F	10,130	F	10,160	F	10,160	F
5NBGP0039	Los Feliz off-ramp	Crystal Springs off-ramp	8850	F	8860	F	8850	F	8790	F	8950	F	8950	F	8980	F	9010	F	8930	F	8970	F	8970	F
5NBGP0040	Crystal Springs off-ramp	Los Feliz on-ramp	8800	F	8810	F	8800	F	8740	F	8900	F	8900	F	8930	F	8940	F	8880	F	8920	F	8920	F
5NBGP0041	Los Feliz on-ramp	Colorado off-ramp	7580	D	7590	D	7580	D	7520	D	7680	D	7670	D	7700	D	7720	D	7660	D	7690	D	7690	D
5NBGP0042	Colorado off-ramp	Colorado on-ramp	7100	C	7110	C	7110	C	7030	C	7200	C	7190	C	7230	C	7240	C	7180	C	7210	C	7210	C
5NBGP0043	Colorado on-ramp	SR 134 EB/Zoo off-ramp	7920	D	7940	D	7930	D	7860	D	8020	D	8020	D	8050	D	8060	D	7990	D	8030	D	8030	D
5NBGP0044	SR 134 EB/Zoo off-ramp	SR 134 WB off-ramp	7190	C	7200	C	7200	C	7050	C	7310	C	7320	C	7350	C	7370	C	7300	C	7340	C	7340	C
5NBGP0045	SR 134 WB off-ramp	SR 134 WB on-ramp	4260	B	4270	B	4270	B	4180	B	4260	B	4260	B	4260	B	4180	B	4110	B	4170	B	4170	B
5NBGP0046	SR 134 WB on-ramp	Western off-ramp	7290	F	7300	F	7300	F	7330	F	7370	F	7380	F	7370	F	7290	F	7230	F	7290	F	7290	F
5NBGP0047	Western off-ramp	Western on-ramp	6660	D	6670	D	6680	D	6700	D	6740	D	6750	D	6730	D	6640	D	6590	D	6650	D	6650	D
5NBGP0048	Western on-ramp	North of Western on-ramp	7220	C	7220	C	7230	C	7250	C	7290	C	7290	C	7290	C	7200	C	7140	C	7190	C	7190	C

NOTES:
 Volume is reported in **mean** vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-89

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Northbound I-5
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 5 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5NBGP0001	South of Eastern off-ramp	Eastern off-ramp	9450	E	9480	E	9470	E	9480	E	9520	E	9530	E	9510	E	9550	E	9550	E	9570	E	9570	E
5NBGP0002	Eastern off-ramp	I-710 off-ramp	9170	D	9180	D	9170	D	9200	D	9180	D	9130	D	9170	D	9090	D	9090	D	9100	D	9100	D
5NBGP0003	I-710 off-ramp	I-710 on-ramp	7960	E	7940	E	7920	E	8010	E	7870	E	7770	E	7870	E	7650	D	7630	D	7670	D	7670	D
5NBGP0004	I-710 on-ramp	Downey on-ramp	10,170	E	10,160	E	10,170	E	10,260	E	10,110	E	10,020	E	10,100	E	9950	E	9900	E	9950	E	9950	E
5NBGP0005	Downey on-ramp	Indiana off-ramp	10,360	F	10,360	F	10,360	F	10,430	F	10,340	F	10,240	E	10,320	F	10,210	E	10,160	E	10,200	E	10,200	E
5NBGP0006	Indiana off-ramp	Indiana on-ramp	9890	E	9890	E	9870	E	9920	E	9840	E	9750	E	9830	E	9680	D	9640	D	9680	D	9680	D
5NBGP0007	Indiana on-ramp	Calzona off-ramp	10,080	E	10,070	E	10,070	E	10,120	E	10,020	E	9930	E	10,010	E	9870	E	9830	E	9870	E	9870	E
5NBGP0008	Calzona off-ramp	Calzona on-ramp	9980	E	9970	E	9970	E	10,020	E	9920	E	9830	E	9910	E	9770	E	9730	E	9770	E	9770	E
5NBGP0009	Calzona on-ramp	Grand Vista off-ramp	10,070	E	10,070	E	10,070	E	10,120	E	10,030	E	9960	E	10,030	E	9910	E	9870	E	9910	E	9910	E
5NBGP0010	Grand Vista off-ramp	US 101 NB off-ramp	9830	E	9830	E	9830	E	9880	E	9790	E	9710	E	9780	E	9660	D	9620	D	9660	D	9660	D
5NBGP0011	US 101 NB off-ramp	I-10 WB off-ramp	7980	E	7990	E	8000	E	8040	E	8000	E	7920	E	7980	E	7920	E	7850	E	7900	E	7900	E
5NBGP0012	I-10 WB off-ramp	Soto off-ramp	5620	F	5630	F	5620	F	5600	F	5640	F	5580	F	5610	F	5620	F	5540	F	5580	F	5580	F
5NBGP0013	Soto off-ramp	SR 60 WB on-ramp	5400	F	5420	F	5390	F	5380	F	5420	F	5360	F	5400	F	5390	F	5300	F	5360	F	5360	F
5NBGP0014	SR 60 WB on-ramp	Seventh off-ramp	6530	F	6490	F	6540	F	6540	F	6500	F	6440	F	6500	F	6440	F	6350	F	6410	F	6410	F
5NBGP0015	Seventh off-ramp	Seventh on-ramp	6280	F	6240	F	6290	F	6270	F	6280	F	6220	F	6270	F	6220	F	6130	F	6190	F	6190	F
5NBGP0016	Seventh on-ramp	I-10 EB on-ramp	6860	F	6840	F	6860	F	6870	F	6870	F	6800	F	6840	F	6820	F	6700	F	6790	F	6790	F
5NBGP0017	I-10 EB on-ramp	Fourth off-ramp	10,260	E	10,240	E	10,270	E	10,300	E	10,340	F	10,320	F	10,340	F	10,430	F	10,300	E	10,400	F	10,400	F
5NBGP0018	Fourth off-ramp	Fourth on-ramp	10,040	E	10,020	E	10,050	E	10,080	E	10,120	E	10,110	E	10,120	E	10,210	E	10,090	E	10,190	E	10,190	E
5NBGP0019	Fourth on-ramp	Cesar Chavez off-ramp	10,660	F	10,640	F	10,650	F	10,690	F	10,730	F	10,710	F	10,720	F	10,830	F	10,710	F	10,800	F	10,800	F
5NBGP0020	Cesar Chavez off-ramp	I-10 EB off-ramp	10,190	E	10,160	E	10,180	E	10,220	E	10,270	E	10,240	E	10,260	E	10,380	E	10,260	E	10,350	E	10,350	E
5NBGP0021	I-10 EB off-ramp	State on-ramp	8450	E	8380	E	8420	E	8460	E	8490	E	8420	E	8470	E	8480	E	8350	E	8450	E	8450	E
5NBGP0022	State on-ramp	I-10 WB on-ramp	8800	F	8740	F	8810	F	8840	F	8850	F	8790	F	8850	F	8890	F	8760	F	8840	F	8840	F
5NBGP0023	I-10 WB on-ramp	Marengo on-ramp	10,590	E	10,490	E	10,520	E	10,500	E	10,380	E	10,320	E	10,370	E	9840	E	9680	D	9910	E	9910	E
5NBGP0024	Marengo on-ramp	Main Street off-ramp	11,140	F	11,050	F	11,080	F	11,070	F	11,000	F	10,920	F	10,980	F	10,470	F	10,310	E	10,540	F	10,540	F
5NBGP0025	Main Street off-ramp	Broadway off-ramp	10,790	E	10,670	E	10,690	E	10,700	E	10,620	E	10,530	E	10,590	E	10,080	E	9950	E	10,180	E	10,180	E
5NBGP0026	Broadway off-ramp	SR 110 NB off-ramp	9990	F	10,040	F	10,030	F	10,020	F	10,040	F	9940	F	10,020	F	9740	F	9590	F	9780	F	9780	F
5NBGP0027	SR 110 NB off-ramp	Pasadena/Broadway on-ramp	8920	F	9110	F	9110	F	9080	F	9090	F	8990	F	9080	F	8890	F	8730	E	8940	F	8940	F
5NBGP0028	Pasadena/Broadway on-ramp	SR 110 SB on-ramp	9930	F	9900	F	9910	F	9910	F	9890	F	9790	F	9880	F	9760	F	9600	F	9800	F	9800	F
5NBGP0029	SR 110 SB on-ramp	Riverside/SR 110 NB on-ramp	10,220	F	10,200	F	10,200	F	10,210	F	10,200	F	10,100	F	10,190	F	10,080	F	9920	F	10,120	F	10,120	F
5NBGP0030	Riverside/SR 110 NB on-ramp	Stadium Way off-ramp	12,580	F	12,570	F	12,580	F	12,570	F	12,590	F	12,470	F	12,580	F	12,490	F	12,300	F	12,470	F	12,470	F
5NBGP0031	Stadium Way off-ramp	Stadium Way on-ramp	12,280	F	12,290	F	12,260	F	12,270	F	12,210	F	12,100	F	12,210	F	11,960	F	11,770	F	11,960	F	11,960	F
5NBGP0032	Stadium Way on-ramp	SR 2 NB off-ramp	12,780	F	12,750	F	12,730	F	12,720	F	12,650	F	12,590	F	12,660	F	12,370	F	12,230	F	12,450	F	12,450	F
5NBGP0033	SR 2 NB off-ramp	SR 2 SB off-ramp	8350	F	8360	F	8390	F	8320	F	8470	F	8480	F	8450	F	8480	F	8390	F	8520	F	8520	F
5NBGP0034	SR 2 SB off-ramp	SR 2 on-ramp	8440	E	8460	E	8480	E	8410	E	8560	E	8570	E	8540	E	8570	E	8480	E	8610	E	8610	E
5NBGP0035	SR 2 on-ramp	Fletcher on-ramp	9080	D	9110	D	9130	D	9060	D	9170	D	9150	D	9120	D	9080	D	9030	D	9140	D	9140	D
5NBGP0036	Fletcher on-ramp	Glendale off-ramp	9500	E	9530	E	9540	E	9480	E	9580	E	9570	E	9540	F	9500	E	9450	E	9560	E	9560	E
5NBGP0037	Glendale off-ramp	Glendale on-ramp	8680	E	8700	E	8720	E	8650	E	8730	E	8690	E	8690	E	8650	E	8590	E	8710	E	8710	E
5NBGP0038	Glendale on-ramp	Los Feliz off-ramp	8910	E	8940	E	8960	D	8900	E	8970	E	8920	E	8920	E	8880	D	8830	D	8940	E	8940	E
5NBGP0039	Los Feliz off-ramp	Crystal Springs off-ramp	8080	E	8110	E	8130	E	8070	E	8140	E	8090	E	8090	E	8050	E	8000	E	8110	E	8110	E
5NBGP0040	Crystal Springs off-ramp	Los Feliz on-ramp	8010	E	8040	E	8060	E	8000	E	8080	E	8030	E	8030	E	7990	E	7940	E	8050	E	8050	E
5NBGP0041	Los Feliz on-ramp	Colorado off-ramp	7190	D	7210	D	7230	D	7170	D	7240	D	7200	D	7200	D	7150	D	7100	D	7210	D	7210	D
5NBGP0042	Colorado off-ramp	Colorado on-ramp	6470	C	6500	C	6520	C	6460	C	6520	C	6480	C	6480	C	6440	C	6380	C	6500	C	6500	C
5NBGP0043	Colorado on-ramp	SR 134 EB/Zoo off-ramp	7910	F	7940	F	7960	F	7900	F	7960	F	7930	F	7930	F	7890	F	7830	F	7940	F	7940	F
5NBGP0044	SR 134 EB/Zoo off-ramp	SR 134 WB off-ramp	6920	C	6940	C	6960	C	6900	C	6950	C	6920	C	6920	C	6920	C	6860	C	6960	C	6960	C
5NBGP0045	SR 134 WB off-ramp	SR 134 WB on-ramp	4860	C	4900	C	4900	C	4860	C	4840	C	4810	C	4800	C	4680	C	4640	C	4730	C	4730	C
5NBGP0046	SR 134 WB on-ramp	Western off-ramp	8440	F	8440	F	8490	F	8450	F	8510	F	8540	F	8490	F	8480	F	8420	F	8510	F	8510	F
5NBGP0047	Western off-ramp	Western on-ramp	7900	E	7930	E	7890	E	7850	E	7930	E	7910	E	7910	E	7900	E	7830	E	7900	E	7900	E
5NBGP0048	Western on-ramp	North of Western on-ramp	9190	D	9200	D	9190	D	9190	D	9270	D	9200	D	9190	D	9260	D	9240	D	9250	D	9250	D

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-90

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Southbound I-5
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 5 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5SBGP0001	North of Western off-ramp	Western off-ramp	9830	E	9830	E	9870	E	9760	E	9940	E	9920	E	9940	E	9760	E	9750	E	9890	E		
5SBGP0002	Western off-ramp	Western on-ramp	8960	F	9070	F	9150	F	8980	F	9230	F	9170	F	9230	F	9010	F	9020	F	8990	F		
5SBGP0003	Western on-ramp	SR 134 EB off-ramp	9920	F	10,040	F	9930	F	9980	F	10,130	F	10,070	F	10,130	F	10,030	F	9920	F	10,050	F		
5SBGP0004	SR 134 EB off-ramp	SR 134 EB on-ramp	7140	D	7120	D	7150	D	7100	D	7170	D	7080	D	7130	D	6950	D	6880	D	6980	D		
5SBGP0005	SR 134 EB on-ramp	SR 134 WB/Fairmont on-ramp	9320	C	9370	C	9400	C	9280	C	9470	D	9380	C	9430	C	9420	C	9350	C	9420	C		
5SBGP0006	SR 134 WB/Fairmont on-ramp	Zoo on-ramp	9990	D	10,050	D	10,090	D	9980	D	10,150	D	10,070	D	10,110	D	10,090	D	10,010	D	10,090	D		
5SBGP0007	Zoo on-ramp	Colorado off-ramp	10,060	F	10,120	F	10,160	F	10,040	F	10,220	F	10,140	F	10,170	F	10,150	F	10,060	F	10,150	F		
5SBGP0008	Colorado off-ramp	Colorado on-ramp	9210	D	9280	D	9320	D	9170	D	9360	D	9280	D	9320	D	9270	D	9210	D	9280	D		
5SBGP0009	Colorado on-ramp	Los Feliz off-ramp	9660	E	9730	E	9780	E	9620	E	9830	E	9730	E	9770	E	9730	E	9670	E	9740	E		
5SBGP0010	Los Feliz off-ramp	Crystal Springs/Los Feliz on-ramp	8280	E	8330	E	8380	E	8250	E	8440	E	8350	E	8380	E	8370	E	8290	E	8350	E		
5SBGP0011	Crystal Springs/Los Feliz on-ramp	Glendale off-ramp	8480	D	8540	D	8600	D	8450	D	8660	D	8560	D	8590	D	8590	D	8510	D	8580	D		
5SBGP0012	Glendale off-ramp	Glendale on-ramp	8270	D	8360	D	8420	D	8240	D	8490	D	8370	D	8410	D	8390	D	8330	D	8400	D		
5SBGP0013	Glendale on-ramp	Fletcher off-ramp	8780	D	8890	D	8940	D	8750	D	9010	D	8880	D	8920	D	8900	D	8810	D	8900	D		
5SBGP0014	Fletcher off-ramp	SR 2 off-ramp	8420	D	8530	D	8560	D	8430	D	8590	D	8510	D	8550	D	8530	D	8490	D	8530	D		
5SBGP0015	SR 2 off-ramp	Stadium Way off-ramp	7690	E	7820	E	7810	E	7690	E	7850	E	7730	E	7770	E	7790	E	7740	E	7800	E		
5SBGP0016	Stadium Way off-ramp	SR 2 on-ramp	6490	E	6560	F	6340	E	6690	F	6680	F	6480	E	6630	F	6720	F	6700	F	6450	E		
5SBGP0017	SR 2 on-ramp	Stadium Way on-ramp	10,320	E	10,360	E	10,350	E	10,300	E	10,280	E	10,180	E	10,280	E	10,150	E	10,060	E	10,150	E		
5SBGP0018	Stadium Way on-ramp	Riverside/SR 110 SB off-ramp	10,490	F	10,530	F	10,550	F	10,470	F	10,460	F	10,400	F	10,520	F	10,420	F	10,310	F	10,400	F		
5SBGP0019	Riverside/SR 110 SB off-ramp	Riverside on-ramp	8090	E	8180	E	8110	E	8040	E	8160	E	8000	E	8080	E	8060	E	7930	E	7950	E		
5SBGP0020	Riverside on-ramp	Avenue 21/SR 110 NB off-ramp	8410	D	8560	D	8450	D	8340	D	8500	D	8320	D	8360	D	8300	D	8190	D	8200	D		
5SBGP0021	Avenue 21/SR 110 NB off-ramp	Avenue 21/SR 110 SB on-ramp	8150	F	8080	F	8070	F	8150	F	8150	F	7950	F	8000	F	7950	F	7810	F	7830	F		
5SBGP0022	Avenue 21/SR 110 SB on-ramp	Main off-ramp	8850	F	8840	F	8800	F	8880	F	8810	F	8780	F	8840	F	8740	F	8560	F	8680	F		
5SBGP0023	Main off-ramp	Broadway on-ramp	8680	E	8650	E	8600	E	8690	E	8540	E	8590	E	8650	E	8420	E	8270	E	8450	E		
5SBGP0024	Broadway on-ramp	Mission off-ramp	10,040	F	9990	F	9970	F	10,020	F	9930	F	9880	F	9980	F	9680	F	9550	F	9680	F		
5SBGP0025	Mission off-ramp	I-10 EB off-ramp	9630	F	9570	F	9590	F	9660	F	9470	F	9390	F	9530	F	9110	F	8950	F	9140	F		
5SBGP0026	I-10 EB off-ramp	Mission on-ramp	7740	E	7640	D	7800	E	7750	E	7750	E	7670	D	7780	E	7640	D	7560	D	7730	E		
5SBGP0027	Mission on-ramp	I-10 WB on-ramp	8010	E	7870	E	7980	E	7970	E	7990	E	7870	E	7980	E	7910	E	7780	E	7950	E		
5SBGP0028	I-10 WB on-ramp	Cesar Chavez on-ramp	10,170	E	10,160	E	10,160	E	10,150	E	10,190	E	10,090	E	10,170	E	10,250	E	10,150	E	10,260	E		
5SBGP0029	Cesar Chavez on-ramp	Fourth off-ramp	10,520	F	10,520	F	10,530	F	10,520	F	10,550	F	10,470	F	10,550	F	10,600	F	10,500	F	10,620	F		
5SBGP0030	Fourth off-ramp	Fourth on-ramp	9880	E	10,000	E	9970	E	10,010	E	10,020	E	9960	E	10,020	E	10,060	E	9960	E	10,040	E		
5SBGP0031	Fourth on-ramp	I-10 WB off-ramp	10,130	E	10,190	E	10,170	E	10,210	E	10,240	E	10,160	E	10,230	E	10,250	E	10,160	E	10,220	E		
5SBGP0032	I-10 WB off-ramp	SR 60 EB off-ramp	7160	F	7150	F	7230	F	7290	F	7210	F	7130	F	7210	F	7100	F	6980	F	7090	F		
5SBGP0033	SR 60 EB off-ramp	Soto off-ramp	4350	F	4380	F	4390	F	4270	F	4510	F	4430	F	4460	F	4380	F	4290	F	4330	F		
5SBGP0034	Soto off-ramp	Seventh on-ramp	3910	E	3990	E	4030	E	3870	E	4100	E	4010	E	4040	E	3960	E	3870	E	3950	E		
5SBGP0035	Seventh on-ramp	Eight on-ramp	4070	E	4090	F	4150	F	4000	F	4200	F	4120	F	4140	F	4100	F	4000	F	4070	F		
5SBGP0036	Eight on-ramp	SR 60 EB on-ramp	4250	F	4260	F	4320	F	4170	F	4370	F	4280	F	4320	F	4270	F	4170	F	4240	F		
5SBGP0037	SR 60 EB on-ramp	US 101 SB on-ramp	5880	E	5830	E	5900	E	5800	E	5920	E	5830	E	5840	E	5860	E	5730	D	5790	E		
5SBGP0038	US 101 SB on-ramp	Lorena on-ramp	8720	D	8690	D	8780	D	8700	D	8790	D	8690	D	8690	D	8620	D	8560	D	8620	D		
5SBGP0039	Lorena on-ramp	Indiana off-ramp	8850	D	8770	D	8840	D	8800	D	8860	D	8760	D	8800	D	8690	D	8630	D	8690	D		
5SBGP0040	Indiana off-ramp	Indiana on-ramp	8600	D	8540	D	8610	D	8560	D	8630	D	8530	D	8550	D	8440	D	8380	D	8440	D		
5SBGP0041	Indiana on-ramp	Ditman off-ramp	8830	D	8780	D	8840	D	8810	D	8870	D	8770	D	8810	D	8710	D	8640	D	8700	D		
5SBGP0042	Ditman off-ramp	Ditman on-ramp	8730	D	8700	D	8760	D	8700	D	8790	D	8690	D	8700	D	8600	D	8550	D	8600	D		
5SBGP0043	Ditman on-ramp	Olympic off-ramp	8860	D	8870	D	8900	D	8850	D	8930	D	8840	D	8870	D	8790	D	8730	D	8780	D		
5SBGP0044	Olympic off-ramp	I-710 SB off-ramp	8690	D	8700	D	8730	D	8680	D	8760	D	8670	D	8710	D	8630	D	8570	D	8620	D		
5SBGP0045	I-710 SB off-ramp	I-710 SB on-ramp	6760	F	6750	F	6770	F	6700	F	6750	F	6710	F	6730	F	6690	F	6640	F	6680	F		
5SBGP0046	I-710 SB on-ramp	South of I-710 SB on-ramp	8450	E	8480	E	8470	E	8420	E	8440	E	8460	E	8440	E	8490	E	8490	E	8500	E		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-91

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Southbound I-5
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 5 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
5SBGP0001	North of Western off-ramp	Western off-ramp	9710	E	9690	E	9660	D	9700	E	9750	E	9720	E	9780	E	9630	D	9560	D	9600	D		
5SBGP0002	Western off-ramp	Western on-ramp	8890	F	8870	F	8840	F	8880	F	8940	F	8860	F	8970	F	8760	E	8700	E	8750	E		
5SBGP0003	Western on-ramp	SR 134 EB off-ramp	9790	F	9760	F	9750	F	9760	F	9840	F	9770	F	9850	F	9640	F	9590	F	9650	F		
5SBGP0004	SR 134 EB off-ramp	SR 134 EB on-ramp	6260	C	6200	C	6190	C	6130	C	6070	C	6010	C	6080	C	5920	C	5840	C	5900	C		
5SBGP0005	SR 134 EB on-ramp	SR 134 WB/Fairmont on-ramp	8970	C	8920	C	8930	C	8900	C	8960	C	8870	C	8930	C	8940	C	8860	C	8910	C		
5SBGP0006	SR 134 WB/Fairmont on-ramp	Zoo on-ramp	9560	D	9520	D	9530	D	9500	D	9560	D	9470	D	9540	D	9520	D	9420	D	9490	D		
5SBGP0007	Zoo on-ramp	Colorado off-ramp	9740	E	9730	E	9740	E	9710	E	9750	E	9680	E	9740	E	9700	E	9620	E	9680	E		
5SBGP0008	Colorado off-ramp	Colorado on-ramp	8470	D	8450	D	8460	D	8420	D	8460	D	8380	D	8450	D	8400	D	8340	D	8390	D		
5SBGP0009	Colorado on-ramp	Los Feliz off-ramp	9200	D	9170	D	9190	D	9150	D	9190	D	9110	D	9180	D	9130	D	9060	D	9110	D		
5SBGP0010	Los Feliz off-ramp	Crystal Springs/Los Feliz on-ramp	7040	D	7030	D	7090	D	7020	D	7040	D	7000	D	7060	D	7100	D	7020	D	7080	D		
5SBGP0011	Crystal Springs/Los Feliz on-ramp	Glendale off-ramp	7710	D	7610	D	7610	D	7570	D	7650	D	7540	D	7630	D	7600	D	7520	D	7560	D		
5SBGP0012	Glendale off-ramp	Glendale off-ramp	7320	C	7330	C	7330	C	7310	C	7370	C	7290	C	7360	C	7320	C	7270	C	7300	C		
5SBGP0013	Glendale on-ramp	Fletcher off-ramp	8260	D	8240	D	8250	D	8230	D	8290	D	8230	D	8280	D	8260	D	8180	D	8200	D		
5SBGP0014	Fletcher off-ramp	SR 2 off-ramp	7840	C	7830	C	7860	C	7820	C	7920	C	7870	C	7930	C	7950	D	7870	C	7870	C		
5SBGP0015	SR 2 off-ramp	Stadium Way off-ramp	7200	D	7240	D	7260	D	7230	D	7320	D	7240	D	7280	D	7340	D	7270	D	7300	D		
5SBGP0016	Stadium Way off-ramp	SR 2 on-ramp	6260	E	6110	E	6150	E	6140	E	6180	E	6150	E	6270	E	6320	E	6200	E	6240	E		
5SBGP0017	SR 2 on-ramp	Stadium Way on-ramp	9640	D	9680	D	9680	D	9640	D	9580	D	9550	D	9550	D	9470	D	9350	D	9460	D		
5SBGP0018	Stadium Way on-ramp	Riverside/SR 110 SB off-ramp	9810	F	9840	F	9850	F	9820	F	9770	F	9730	F	9750	F	9660	D	9560	F	9640	F		
5SBGP0019	Riverside/SR 110 SB off-ramp	Riverside on-ramp	7670	D	7670	D	7720	D	7660	D	7600	D	7610	D	7620	D	7560	D	7480	D	7530	D		
5SBGP0020	Riverside on-ramp	Avenue 21/SR 110 NB off-ramp	7770	D	7750	D	7820	D	7730	D	7690	D	7670	D	7690	D	7630	F	7550	D	7610	D		
5SBGP0021	Avenue 21/SR 110 NB off-ramp	Avenue 21/SR 110 SB on-ramp	7510	F	7450	F	7470	F	7430	F	7440	F	7250	F	7450	F	7260	F	7160	F	7320	F		
5SBGP0022	Avenue 21/SR 110 SB on-ramp	Main off-ramp	7880	E	7850	E	7830	E	7890	E	7800	E	7700	E	7780	E	7650	E	7530	E	7620	E		
5SBGP0023	Main off-ramp	Broadway on-ramp	7750	D	7690	D	7650	D	7730	D	7600	D	7490	D	7570	D	7360	D	7250	D	7340	D		
5SBGP0024	Broadway on-ramp	Mission off-ramp	8230	E	8170	E	8150	E	8200	E	8030	E	7960	E	8030	E	7750	E	7650	D	7740	D		
5SBGP0025	Mission off-ramp	I-10 EB off-ramp	7900	E	7840	E	7820	E	7870	E	7680	D	7620	D	7680	D	7360	D	7240	D	7350	D		
5SBGP0026	I-10 EB off-ramp	Mission on-ramp	6150	C	6140	C	6080	C	6120	C	5980	C	5940	C	6020	C	5970	C	5880	C	5930	C		
5SBGP0027	Mission on-ramp	I-10 WB on-ramp	6380	D	6330	C	6290	C	6330	C	6220	C	6180	C	6270	C	6220	C	6130	C	6180	C		
5SBGP0028	I-10 WB on-ramp	Cesar Chavez on-ramp	9270	D	9250	D	9260	D	9220	D	9260	D	9250	D	9280	D	9310	D	9160	D	9260	D		
5SBGP0029	Cesar Chavez on-ramp	Fourth off-ramp	9610	D	9590	D	9600	D	9570	D	9600	D	9600	D	9630	D	9650	D	9490	D	9590	D		
5SBGP0030	Fourth off-ramp	Fourth on-ramp	9280	D	9270	D	9280	D	9250	D	9310	D	9270	D	9310	D	9370	D	9220	D	9310	D		
5SBGP0031	Fourth on-ramp	I-10 WB off-ramp	9550	D	9530	D	9550	D	9520	D	9570	D	9530	D	9570	D	9640	D	9490	D	9580	D		
5SBGP0032	I-10 WB off-ramp	SR 60 EB off-ramp	7900	F	7880	F	7860	F	7860	F	7750	F	7680	F	7790	F	7780	F	7670	F	7730	F		
5SBGP0033	SR 60 EB off-ramp	Soto off-ramp	6000	F	6010	F	6000	F	5980	F	6020	F	6020	F	6000	F	6040	F	6010	F	6020	F		
5SBGP0034	Soto off-ramp	Seventh on-ramp	5720	F	5720	F	5720	F	5690	F	5730	F	5760	F	5730	F	5760	F	5730	F	5730	F		
5SBGP0035	Seventh on-ramp	Eight on-ramp	5870	F	5840	F	5850	F	5840	F	5860	F	5880	F	5860	F	5870	F	5860	F	5880	F		
5SBGP0036	Eight on-ramp	SR 60 EB on-ramp	6020	F	5990	F	6010	F	5990	F	6010	F	6030	F	6010	F	6020	F	6020	F	6020	F		
5SBGP0037	SR 60 EB on-ramp	US 101 SB on-ramp	8050	F	8050	F	8010	F	8060	F	8040	F	8070	F	8050	F	8070	F	8050	F	8040	F		
5SBGP0038	US 101 SB on-ramp	Lorena on-ramp	11,500	F	11,500	F	11,460	F	11,530	F	11,460	F	11,500	F	11,480	F	11,460	F	11,450	F	11,450	F		
5SBGP0039	Lorena on-ramp	Indiana off-ramp	11,570	F	11,570	F	11,550	F	11,610	F	11,530	F	11,560	F	11,560	F	11,530	F	11,510	F	11,520	F		
5SBGP0040	Indiana off-ramp	Indiana on-ramp	11,420	F	11,400	F	11,390	F	11,440	F	11,370	F	11,400	F	11,380	F	11,360	F	11,350	F	11,360	F		
5SBGP0041	Indiana on-ramp	Ditman off-ramp	11,700	F	11,700	F	11,700	F	11,720	F	11,640	F	11,690	F	11,690	F	11,650	F	11,630	F	11,650	F		
5SBGP0042	Ditman off-ramp	Ditman on-ramp	11,630	F	11,640	F	11,620	F	11,650	F	11,600	F	11,630	F	11,630	F	11,600	F	11,580	F	11,590	F		
5SBGP0043	Ditman on-ramp	Olympic off-ramp	11,780	F	11,780	F	11,770	F	11,790	F	11,750	F	11,790	F	11,790	F	11,780	F	11,750	F	11,770	F		
5SBGP0044	Olympic off-ramp	I-710 SB off-ramp	11,690	F	11,680	F	11,670	F	11,700	F	11,660	F	11,700	F	11,700	F	11,690	F	11,660	F	11,680	F		
5SBGP0045	I-710 SB off-ramp	I-710 SB on-ramp	9030	F	9010	F	9020	F	9020	F	8990	F	9020	F	9020	F	9010	F	8980	F	9000	F		
5SBGP0046	I-710 SB on-ramp	South of I-710 SB on-ramp	11,190	F	11,190	F	11,180	F	11,170	F	11,190	F	11,200	F	11,220	F	11,210	F	11,190	F	11,200	F		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-92

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound I-10
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 10 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
10EBGP0001	East of SB I-5 on-ramp	SB I-5 on-ramp	1710	A	1730	A	1730	A	1680	A	1780	A	1730	A	1760	A	1960	A	1950	A	1950	A	1950	A
10EBGP0002	SB I-5 on-ramp	EB I-10/NB I-5 on-ramp	3760	B	3780	B	3680	B	3690	B	3590	B	3590	B	3600	B	3370	B	3330	B	3370	B	3370	B
10EBGP0003	EB I-10/NB I-5 on-ramp	Soto/Marengo on-ramp	6280	B	6230	B	6130	B	6170	B	6060	B	6080	B	6070	B	5960	B	5920	B	5920	B	5920	B
10EBGP0004	Soto/Marengo on-ramp	City Terrace off-ramp	7280	D	7190	D	7090	C	7090	C	7020	C	7040	C	7030	C	6890	C	6860	C	6870	C	6870	C
10EBGP0005	City Terrace off-ramp	Eastern off-ramp	6890	D	6800	C	6700	C	6730	C	6600	E	6620	C	6630	C	6460	C	6430	C	6450	D	6450	D
10EBGP0006	Eastern off-ramp	I-710 off-ramp	6320	B	6220	B	6120	B	6170	B	6030	B	6090	B	6080	B	5790	B	5790	B	5820	B	5820	B
10EBGP0007	I-710 off-ramp	Eastern on-ramp	4430	B	4440	B	4480	B	4380	B	4620	B	4580	B	4590	B	4530	B	4550	B	4540	B	4540	B
10EBGP0008	Eastern on-ramp	I-710 on-ramp	4830	C	4880	C	4910	C	4810	C	5040	C	5000	C	5010	C	4910	C	4940	C	4930	C	4930	C
10EBGP0009	I-710 on-ramp	Fremont off-ramp	6310	D	6180	D	6180	D	6260	D	6250	D	6220	D	6240	D	6510	D	6500	D	6410	D	6410	D
10EBGP0010	Fremont off-ramp	Fremont on-ramp	5700	C	5620	C	5610	C	5700	C	5550	C	5570	C	5540	C	5610	C	5600	C	5590	C	5590	C
10EBGP0011	Fremont on-ramp	Atlantic off-ramp	6300	D	6270	D	6260	D	6330	D	6280	D	6300	D	6270	D	6370	D	6350	D	6350	D	6350	D
10EBGP0012	Atlantic off-ramp	Atlantic on-ramp	5660	C	5680	C	5670	C	5710	C	5630	C	5650	C	5640	C	5720	C	5710	C	5690	C	5690	C
10EBGP0013	Atlantic on-ramp	Garfield off-ramp	6230	D	6260	D	6260	D	6290	D	6230	D	6250	D	6240	D	6310	D	6300	D	6300	D	6300	D
10EBGP0014	Garfield off-ramp	Garfield on-ramp	5770	C	5840	C	5850	C	5840	C	5810	C	5800	C	5790	C	5820	C	5830	C	5810	C	5810	C
10EBGP0015	Garfield on-ramp	New off-ramp	6520	D	6650	D	6660	D	6660	D	6610	D	6600	D	6590	D	6640	D	6660	D	6640	D	6640	D
10EBGP0016	New off-ramp	New on-ramp	6180	C	6340	C	6350	C	6310	C	6330	C	6320	C	6320	C	6390	C	6380	C	6360	C	6360	C
10EBGP0017	New on-ramp	Del Mar off-ramp	6880	D	6960	D	6960	D	6930	D	6940	D	6940	D	6940	D	6990	D	6990	D	6970	D	6970	D
10EBGP0018	Del Mar off-ramp	Del Mar on-ramp	6650	D	6680	D	6690	D	6650	D	6670	D	6660	D	6650	D	6690	D	6710	D	6690	D	6690	D
10EBGP0019	Del Mar on-ramp	San Gabriel off-ramp	7120	D	7130	D	7140	D	7100	D	7120	D	7110	D	7100	D	7140	D	7160	D	7140	D	7140	D
10EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	6800	D	6930	D	6940	D	6890	D	6890	D	6870	D	6880	D	6880	D	6910	D	6900	D	6900	D
10EBGP0021	San Gabriel on-ramp	Walnut Grove off-ramp	7140	D	7250	D	7260	D	7210	D	7220	D	7210	D	7210	D	7220	D	7250	D	7240	D	7240	D
10EBGP0022	Walnut Grove off-ramp	Walnut Grove on-ramp	7020	D	7120	D	7130	D	7090	D	7090	D	7080	D	7080	D	7080	D	7110	D	7100	D	7100	D
10EBGP0023	Walnut Grove on-ramp	Rosemead off-ramp	7260	D	7350	E	7360	E	7320	E	7330	E	7320	E	7320	E	7330	E	7360	E	7350	E	7350	E
10EBGP0024	Rosemead off-ramp	Rosemead on-ramp	6270	C	6260	C	6270	C	6230	C	6230	C	6220	C	6210	C	6200	C	6230	C	6240	C	6240	C
10EBGP0025	Rosemead on-ramp	Baldwin off-ramp	6840	D	6940	D	6950	D	6910	D	6920	D	6910	D	6910	D	6900	D	6930	D	6940	D	6940	D
10EBGP0026	Baldwin off-ramp	Baldwin on-ramp	6240	C	6350	C	6370	C	6320	C	6370	C	6360	C	6360	C	6400	C	6430	D	6430	D	6430	D
10EBGP0027	Baldwin on-ramp	Santa Anita off-ramp	7040	C	7110	C	7130	C	7060	C	7120	C	7110	C	7110	C	7130	C	7150	C	7170	C	7170	C
10EBGP0028	Santa Anita off-ramp	Santa Anita on-ramp	6440	D	6540	D	6560	D	6470	D	6560	D	6560	D	6560	D	6590	D	6600	D	6610	D	6610	D
10EBGP0029	Santa Anita on-ramp	SB Peck off-ramp	6980	C	7070	C	7090	C	7010	C	7080	C	7080	C	7080	C	7110	C	7120	C	7130	C	7130	C
10EBGP0030	SB Peck off-ramp	NB Peck off-ramp	6780	C	6870	C	6880	C	6810	C	6870	C	6880	C	6880	C	6910	C	6920	C	6920	C	6920	C
10EBGP0031	NB Peck off-ramp	Peck/Valley on-ramp	6460	D	6520	D	6550	D	6490	D	6600	D	6590	D	6600	D	6620	D	6640	D	6640	D	6640	D
10EBGP0032	Peck/Valley on-ramp	N Peck on-ramp	6750	D	6820	D	6840	D	6790	D	6900	D	6870	D	6890	D	6930	D	6950	D	6950	D	6950	D
10EBGP0033	N Peck on-ramp	Garvey/Durfee on-ramp	7060	D	7110	D	7130	D	7080	D	7190	D	7170	D	7190	D	7210	D	7240	D	7230	D	7230	D
10EBGP0034	Garvey/Durfee on-ramp	SB I-605 off-ramp	7600	C	7650	D	7660	D	7610	D	7730	D	7710	D	7720	D	7750	D	7780	D	7770	D	7770	D
10EBGP0035	SB I-605 off-ramp	NB I-605 off-ramp	6970	E	7010	E	7030	E	7030	E	7060	E	7050	E	7070	E	7050	E	7100	E	7080	E	7080	E
10EBGP0036	NB I-605 off-ramp	I-605 on-ramp	5760	C	5810	C	5850	C	5860	C	5880	C	5860	C	5880	C	5870	C	5930	C	5890	C	5890	C
10EBGP0037	I-605 on-ramp	West of I-605 on-ramp	8370	C	8390	C	8390	C	8460	C	8420	C	8390	C	8400	C	8420	C	8420	C	8470	C	8470	C

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-93

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound I-10
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 10 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
10EBGP0001	East of SB I-5 on-ramp	SB I-5 on-ramp	1210	A	1250	A	1240	A	1200	A	1290	A	1280	A	1300	A	1480	A	1510	A	1430	A		
10EBGP0002	SB I-5 on-ramp	EB I-10/NB I-5 on-ramp	4830	C	4800	C	4820	C	4810	C	4690	C	4680	C	4660	B	4480	B	4490	B	4470	B		
10EBGP0003	EB I-10/NB I-5 on-ramp	Soto/Marengo on-ramp	8980	C	8980	C	8980	C	8970	C	8870	C	8890	C	8850	C	8850	C	8880	C	8850	C		
10EBGP0004	Soto/Marengo on-ramp	City Terrace off-ramp	10,060	E	10,040	E	10,030	E	10,050	E	9900	E	9920	E	9870	E	9840	E	9860	E	9820	E		
10EBGP0005	City Terrace off-ramp	Eastern off-ramp	9620	E	9590	E	9580	E	9600	E	9410	E	9440	E	9390	E	9330	E	9360	E	9320	E		
10EBGP0006	Eastern off-ramp	I-710 off-ramp	8950	C	8910	C	8910	C	8940	C	8690	C	8710	C	8690	C	8500	C	8570	C	8510	C		
10EBGP0007	I-710 off-ramp	Eastern on-ramp	6420	C	6460	D	6410	C	6440	D	6550	D	6560	D	6560	D	6440	D	6490	D	6460	D		
10EBGP0008	Eastern on-ramp	I-710 on-ramp	6930	D	7010	D	6950	D	6940	D	7090	D	7110	D	7110	D	6870	D	6940	D	6900	D		
10EBGP0009	I-710 on-ramp	Fremont off-ramp	9640	F	9450	F	9450	F	9610	F	9600	F	9610	F	9580	F	9570	F	9610	F	9550	F		
10EBGP0010	Fremont off-ramp	Fremont on-ramp	8920	E	8880	E	8900	E	8950	F	8920	E	8900	E	8900	E	8900	E	8900	E	8890	E		
10EBGP0011	Fremont on-ramp	Atlantic off-ramp	9660	F	9630	F	9650	F	9700	F	9720	F	9700	F	9710	F	9710	F	9710	F	9710	F		
10EBGP0012	Atlantic off-ramp	Atlantic on-ramp	8840	E	8840	E	8840	E	8850	E	8830	E	8850	E	8830	E	8840	E	8850	E	8850	E		
10EBGP0013	Atlantic on-ramp	Garfield off-ramp	9860	F	9850	F	9860	F	9870	F	9890	F	9890	F	9870	F	9890	F	9900	F	9900	F		
10EBGP0014	Garfield off-ramp	Garfield on-ramp	9020	F	9020	F	9010	F	9030	F	9000	F	9000	F	9000	F	8970	F	8980	F	8980	F		
10EBGP0015	Garfield on-ramp	New off-ramp	10,180	F	10,190	F	10,180	F	10,190	F	10,170	F	10,180	F	10,170	F	10,160	F	10,170	F	10,170	F		
10EBGP0016	New off-ramp	New on-ramp	9520	F	9560	F	9580	F	9530	F	9560	F	9560	F	9560	F	9640	F	9640	F	9630	F		
10EBGP0017	New on-ramp	Del Mar off-ramp	10,140	F	10,120	F	10,120	F	10,110	F	10,100	F	10,110	F	10,090	F	10,180	F	10,190	F	10,170	F		
10EBGP0018	Del Mar off-ramp	Del Mar on-ramp	9720	F	9730	F	9730	F	9730	F	9710	F	9730	F	9710	F	9750	F	9760	F	9750	F		
10EBGP0019	Del Mar on-ramp	San Gabriel off-ramp	10,290	F	10,280	F	10,280	F	10,290	F	10,270	F	10,280	F	10,260	F	10,300	F	10,310	F	10,300	F		
10EBGP0020	San Gabriel off-ramp	San Gabriel on-ramp	9610	F	9680	F	9670	F	9680	F	9660	F	9670	F	9660	F	9650	F	9650	F	9670	F		
10EBGP0021	San Gabriel on-ramp	Walnut Grove off-ramp	10,040	F	10,130	F	10,120	F	10,130	F	10,110	F	10,120	F	10,110	F	10,100	F	10,100	F	10,120	F		
10EBGP0022	Walnut Grove off-ramp	Walnut Grove on-ramp	9800	F	9890	F	9890	F	9890	F	9870	F	9880	F	9870	F	9860	F	9860	F	9880	F		
10EBGP0023	Walnut Grove on-ramp	Rosemead off-ramp	10,140	F	10,210	F	10,200	F	10,210	F	10,190	F	10,200	F	10,190	F	10,180	F	10,190	F	10,200	F		
10EBGP0024	Rosemead off-ramp	Rosemead on-ramp	8390	E	8330	E	8330	E	8330	E	8310	E	8320	E	8310	E	8280	E	8290	E	8300	E		
10EBGP0025	Rosemead on-ramp	Baldwin off-ramp	9360	F	9360	F	9360	F	9380	F	9340	F	9350	F	9350	F	9320	F	9340	F	9340	F		
10EBGP0026	Baldwin off-ramp	Baldwin on-ramp	8340	E	8380	E	8380	E	8390	E	8390	E	8390	E	8400	E	8400	E	8430	E	8430	E		
10EBGP0027	Baldwin on-ramp	Santa Anita off-ramp	9350	E	9370	E	9370	E	9350	E	9360	E	9360	E	9370	E	9470	E	9390	E	9390	E		
10EBGP0028	Santa Anita off-ramp	Santa Anita on-ramp	8270	E	8290	E	8270	E	8300	E	8280	E	8260	E	8290	E	8360	E	8310	E	8300	E		
10EBGP0029	Santa Anita on-ramp	SB Peck off-ramp	8960	D	8980	E	8970	D	8990	E	8970	D	8960	D	8990	E	9050	E	9000	E	8990	D		
10EBGP0030	SB Peck off-ramp	NB Peck off-ramp	8600	D	8620	D	8600	D	8640	D	8620	D	8610	D	8620	D	8690	D	8630	D	8630	D		
10EBGP0031	NB Peck off-ramp	Peck/Valley on-ramp	8070	E	8100	E	8080	E	8130	E	8100	E	8080	E	8120	E	8180	E	8130	E	8120	E		
10EBGP0032	Peck/Valley on-ramp	N Peck on-ramp	8340	E	8380	E	8360	E	8400	F	8380	F	8350	E	8400	F	8470	F	8410	F	8400	F		
10EBGP0033	N Peck on-ramp	Garvey/Durfee on-ramp	8690	F	8620	F	8660	F	8610	F	8590	F	8600	F	8610	F	8730	F	8730	F	8670	F		
10EBGP0034	Garvey/Durfee on-ramp	SB I-605 off-ramp	9460	E	9380	E	9430	E	9370	E	9350	E	9370	E	9370	E	9490	E	9490	E	9430	E		
10EBGP0035	SB I-605 off-ramp	NB I-605 off-ramp	8340	E	8360	E	8350	E	8420	F	8440	F	8420	F	8370	E	8450	F	8460	F	8410	F		
10EBGP0036	NB I-605 off-ramp	I-605 on-ramp	6660	D	6690	D	6640	D	6710	D	6710	D	6730	D	6680	D	6770	D	6760	D	6720	D		
10EBGP0037	I-605 on-ramp	West of I-605 on-ramp	10,910	D	10,930	D	10,820	D	10,910	D	10,880	D	10,880	D	10,880	D	10,960	D	10,930	D	10,960	D		

NOTES:
 Volume is reported in **mean** vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-94

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound I-10
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 10 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
10WBG0001	East of I-605 off-ramp	I-605 off-ramp	10,130	D	10,130	D	10,120	D	10,130	D	10,150	D	10,000	D	10,130	D	10,140	D	10,120	D	10,130	D	10,130	D
10WBG0002	I-605 off-ramp	NB I-605 on-ramp	6990	C	7010	C	7020	C	7150	C	7030	C	6920	C	6990	C	7000	C	7030	C	7010	C	7010	C
10WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	7860	C	7890	C	7890	C	7810	C	7920	C	7830	C	7890	C	7960	C	7980	C	7970	C	7970	C
10WBG0004	SB I-605 on-ramp	Garvey/Durfee off-ramp	9170	F	9200	F	9210	F	9010	E	9220	F	9150	F	9200	F	9260	E	9280	E	9270	F	9270	F
10WBG0005	Garvey/Durfee off-ramp	NB Peck off-ramp	8210	E	8250	E	8250	E	8850	F	8260	E	8200	E	8250	E	8260	E	8290	E	8290	E	8290	E
10WBG0006	NB Peck off-ramp	Valley off-ramp	7910	E	7950	E	7950	E	8550	E	7970	E	7910	E	7950	E	7970	E	7990	E	7990	E	7990	E
10WBG0007	Valley off-ramp	Valley on-ramp	7750	C	7790	C	7790	C	8400	D	7800	C	7750	C	7790	C	7810	C	7830	C	7830	C	7830	C
10WBG0008	Valley on-ramp	SB Peck off-ramp	8030	D	8080	D	8090	D	8620	D	8110	D	8050	D	8090	D	8100	D	8130	D	8110	D	8110	D
10WBG0009	SB Peck off-ramp	Peck on-ramp	7890	C	7940	C	7950	C	8470	D	7960	C	7910	C	7950	C	7960	C	7990	C	7960	C	7960	C
10WBG0010	Peck on-ramp	Santa Anita off-ramp	8230	D	8260	D	8280	D	8750	D	8280	D	8230	D	8270	D	8280	D	8320	D	8300	D	8300	D
10WBG0011	Santa Anita off-ramp	Santa Anita on-ramp	7420	D	7450	D	7470	D	7930	E	7470	D	7430	D	7470	D	7480	D	7510	D	7490	D	7490	D
10WBG0012	Santa Anita on-ramp	Temple City off-ramp	8370	F	8380	F	8390	F	8670	F	8400	F	8380	F	8390	F	8410	F	8440	F	8410	F	8410	F
10WBG0013	Temple City off-ramp	Temple City on-ramp	7550	D	7630	D	7630	D	7890	E	7660	D	7630	D	7640	D	7700	D	7720	D	7690	D	7690	D
10WBG0014	Temple City on-ramp	Rosemead off-ramp	8550	F	8590	F	8590	F	8830	F	8600	F	8600	F	8590	F	8620	F	8650	F	8620	F	8620	F
10WBG0015	Rosemead off-ramp	Rosemead on-ramp	7750	D	7720	D	7710	D	7980	E	7710	D	7690	D	7710	D	7710	D	7710	D	7690	D	7690	D
10WBG0016	Rosemead on-ramp	Walnut Grove off-ramp	8870	F	8960	F	8940	F	9160	F	8930	F	8930	F	8940	F	8910	F	8900	F	8890	F	8890	F
10WBG0017	Walnut Grove off-ramp	Walnut Grove on-ramp	8450	E	8540	E	8520	E	8780	E	8510	E	8490	E	8510	E	8530	E	8530	E	8510	E	8510	E
10WBG0018	Walnut Grove on-ramp	San Gabriel off-ramp	8890	F	8910	F	8900	F	9140	F	8870	F	8840	F	8860	F	8840	F	8860	F	8850	F	8850	F
10WBG0019	San Gabriel off-ramp	San Gabriel on-ramp	8440	E	8470	E	8460	E	8670	E	8430	E	8400	E	8420	E	8400	E	8410	E	8410	E	8410	E
10WBG0020	San Gabriel on-ramp	Del Mar off-ramp	9000	F	8940	F	8950	F	9110	F	8910	F	8920	F	8900	F	8890	F	8910	F	8890	F	8890	F
10WBG0021	Del Mar off-ramp	NB Del Mar on-ramp	8310	E	8250	E	8250	E	8430	E	8200	E	8240	E	8200	E	8200	E	8220	E	8210	E	8210	E
10WBG0022	NB Del Mar on-ramp	SB Del Mar on-ramp	8490	F	8400	F	8410	F	8520	F	8370	F	8400	F	8360	F	8390	F	8420	F	8390	F	8390	F
10WBG0023	SB Del Mar on-ramp	New off-ramp	8730	D	8720	D	8730	D	8750	D	8710	D	8720	D	8690	D	8720	D	8760	D	8730	D	8730	D
10WBG0024	New off-ramp	New on-ramp	8020	E	8020	E	8030	E	8150	E	8010	E	8000	E	8000	E	8010	E	8050	E	8030	E	8030	E
10WBG0025	New on-ramp	Garfield off-ramp	8390	F	8350	F	8370	F	8500	F	8350	F	8350	F	8340	F	8360	F	8400	F	8370	F	8370	F
10WBG0026	Garfield off-ramp	Garfield on-ramp	7440	D	7450	D	7470	D	7570	D	7370	D	7340	D	7360	D	7360	D	7380	D	7360	D	7360	D
10WBG0027	Garfield on-ramp	Atlantic off-ramp	8510	F	8520	F	8530	F	8710	F	8520	F	8530	F	8520	E	8510	E	8550	F	8500	F	8500	F
10WBG0028	Atlantic off-ramp	Atlantic on-ramp	7640	D	7480	D	7500	D	7770	D	7450	D	7510	D	7470	D	7470	D	7520	D	7460	D	7460	D
10WBG0029	Atlantic on-ramp	Fremont off-ramp	8430	F	8180	E	8200	E	8670	F	8280	E	8290	E	8280	E	8200	E	8250	E	8200	E	8200	E
10WBG0030	Fremont off-ramp	Fremont on-ramp	7780	D	7830	E	7840	E	7890	E	7840	E	7830	E	7840	E	7780	D	7820	D	7840	E	7840	E
10WBG0031	Fremont on-ramp	I-710/Eastern off-ramp	8440	F	8220	E	8190	E	8460	F	8500	F	8460	F	8480	F	8340	F	8390	F	8410	F	8410	F
10WBG0032	I-710/Eastern off-ramp	Campus on-ramp	6060	E	6150	E	5950	E	6200	E	5800	D	6140	E	6150	E	6240	E	6170	E	6240	E	6240	E
10WBG0033	Campus on-ramp	I-710 on-ramp	7160	D	7220	D	7010	D	7320	D	6910	D	7230	D	7250	D	7320	D	7250	D	7330	D	7330	D
10WBG0034	I-710 on-ramp	Herbert on-ramp	8960	C	9220	C	9120	C	8930	C	8800	C	8860	C	8840	C	9000	C	9040	C	8950	C	8950	C
10WBG0035	Herbert on-ramp	Soto off-ramp	9720	E	9970	E	9860	E	9700	E	9560	E	9610	E	9590	E	9740	E	9780	E	9690	E	9690	E
10WBG0036	Soto off-ramp	WB I-10/SB I-5 off-ramp	8890	C	9140	C	9030	C	8890	C	8730	C	8780	C	8770	C	8910	C	8950	C	8880	C	8880	C
10WBG0037	WB I-10/SB I-5 off-ramp	NB I-5 off-ramp	6270	C	6360	C	6350	C	6270	C	6120	C	6130	C	6150	C	6140	C	6130	C	6100	C	6100	C
10WBG0038	NB I-5 off-ramp	West of NB I-5 off-ramp	3780	C	4000	C	4000	C	4020	C	4000	C	3950	C	3980	C	4280	C	4220	C	4230	C	4230	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-95

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound I-10
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 10 - PM Peak Hour Analysis																										
Freeway Segment			2035 No Build Alternative				2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
10WBG0001	East of I-605 off-ramp	I-605 off-ramp	8040	C	8050	C	8050	C	8010	C	8070	C	8050	C	8070	C	8080	C	8090	C	8080	C	8080	C	8080	C
10WBG0002	I-605 off-ramp	NB I-605 on-ramp	5000	B	5010	B	5040	B	5010	B	5050	B	5020	B	5040	B	5030	B	5030	B	5060	B	5060	B	5060	B
10WBG0003	NB I-605 on-ramp	SB I-605 on-ramp	6020	C	6030	C	6050	C	5950	C	6070	C	6040	C	6050	C	6200	C	6200	C	6160	C	6160	C	6160	C
10WBG0004	SB I-605 on-ramp	Garvey/Durfee off-ramp	7510	F	7520	F	7540	F	7390	F	7560	F	7530	F	7540	F	7680	F	7680	F	7640	F	7640	F	7640	F
10WBG0005	Garvey/Durfee off-ramp	NB Peck off-ramp	6590	D	6630	D	6630	D	7000	D	6670	D	6630	D	6660	D	6770	D	6770	D	6750	D	6750	D	6750	D
10WBG0006	NB Peck off-ramp	Valley off-ramp	6310	C	6350	C	6350	C	6720	D	6390	C	6350	C	6370	C	6500	D	6500	D	6470	D	6470	D	6470	D
10WBG0007	Valley off-ramp	Valley on-ramp	6200	C	6220	C	6230	C	6590	C	6270	C	6220	C	6250	C	6370	C	6380	C	6350	C	6350	C	6350	C
10WBG0008	Valley on-ramp	SB Peck off-ramp	6590	C	6620	C	6640	C	6980	C	6670	C	6640	C	6660	C	6790	C	6790	C	6750	C	6750	C	6750	C
10WBG0009	SB Peck off-ramp	Peck on-ramp	6460	C	6500	C	6510	C	6860	C	6550	C	6510	C	6540	C	6660	C	6670	C	6620	C	6620	C	6620	C
10WBG0010	Peck on-ramp	Santa Anita off-ramp	6910	C	6930	C	6940	C	7270	C	6960	C	6950	C	6950	C	7060	C	7070	C	7010	C	7010	C	7010	C
10WBG0011	Santa Anita off-ramp	Santa Anita on-ramp	6160	C	6190	C	6210	C	6550	D	6220	C	6240	C	6220	C	6350	C	6350	C	6290	C	6290	C	6290	C
10WBG0012	Santa Anita on-ramp	Temple City off-ramp	7160	E	7190	E	7200	E	7410	E	7190	E	7170	E	7180	E	7290	E	7300	E	7240	E	7240	E	7240	E
10WBG0013	Temple City off-ramp	Temple City on-ramp	6250	C	6370	C	6380	C	6590	D	6390	C	6360	C	6390	C	6570	D	6580	D	6500	D	6500	D	6500	D
10WBG0014	Temple City on-ramp	Rosemead off-ramp	7180	D	7260	D	7270	D	7480	E	7270	D	7240	D	7260	D	7400	E	7410	E	7340	E	7340	E	7340	E
10WBG0015	Rosemead off-ramp	Rosemead on-ramp	6460	D	6440	C	6440	C	6650	D	6440	C	6420	C	6430	C	6520	D	6520	D	6460	D	6460	D	6460	D
10WBG0016	Rosemead on-ramp	Walnut Grove off-ramp	7490	D	7600	D	7600	D	7800	D	7580	D	7550	D	7560	D	7650	D	7670	D	7590	D	7590	D	7590	D
10WBG0017	Walnut Grove off-ramp	Walnut Grove on-ramp	7050	D	7180	D	7180	D	7370	D	7170	D	7130	D	7160	D	7310	D	7330	D	7230	D	7230	D	7230	D
10WBG0018	Walnut Grove on-ramp	San Gabriel off-ramp	7480	D	7520	D	7520	D	7720	D	7500	D	7470	D	7490	D	7630	D	7650	D	7550	D	7550	D	7550	D
10WBG0019	San Gabriel off-ramp	San Gabriel on-ramp	7000	D	7040	D	7040	D	7230	D	7020	D	6990	D	7000	D	7140	D	7170	D	7060	D	7060	D	7060	D
10WBG0020	San Gabriel on-ramp	Del Mar off-ramp	7540	E	7510	E	7510	E	7700	E	7490	E	7450	E	7470	E	7650	E	7690	E	7580	E	7580	E	7580	E
10WBG0021	Del Mar off-ramp	NB Del Mar on-ramp	6910	D	6890	D	6890	D	7090	D	6870	D	6830	D	6850	D	7030	D	7070	D	6960	D	6960	D	6960	D
10WBG0022	NB Del Mar on-ramp	SB Del Mar on-ramp	7080	D	7070	D	7060	D	7250	D	7040	D	7000	D	7030	D	7210	D	7250	D	7150	D	7150	D	7150	D
10WBG0023	SB Del Mar on-ramp	New off-ramp	7310	C	7380	C	7380	C	7580	D	7340	C	7300	C	7330	C	7530	D	7560	D	7460	D	7460	D	7460	D
10WBG0024	New off-ramp	New on-ramp	6480	D	6530	D	6520	D	6770	D	6460	D	6410	C	6450	C	6670	D	6710	D	6600	D	6600	D	6600	D
10WBG0025	New on-ramp	Garfield off-ramp	6700	D	6700	D	6690	D	6980	D	6650	D	6600	D	6630	D	6830	D	6870	D	6760	D	6760	D	6760	D
10WBG0026	Garfield off-ramp	Garfield on-ramp	5870	C	5840	C	5840	C	6110	C	5770	C	5720	C	5750	C	5930	C	5980	C	5860	C	5860	C	5860	C
10WBG0027	Garfield on-ramp	Atlantic off-ramp	6490	D	6350	D	6350	D	6680	D	6320	D	6280	D	6310	D	6590	D	6640	D	6500	D	6500	D	6500	D
10WBG0028	Atlantic off-ramp	Atlantic on-ramp	5560	C	5410	C	5410	C	5730	C	5380	C	5340	C	5370	C	5640	C	5700	C	5560	C	5560	C	5560	C
10WBG0029	Atlantic on-ramp	Fremont off-ramp	6000	D	5640	C	5650	C	6090	D	5740	D	5660	D	5700	D	5910	D	5980	D	5860	D	5860	D	5860	D
10WBG0030	Fremont off-ramp	Fremont on-ramp	5270	C	4950	C	4940	C	5080	C	4970	C	4900	C	4940	C	5150	C	5200	C	5070	C	5070	C	5070	C
10WBG0031	Fremont on-ramp	I-710/Eastern off-ramp	5560	C	5130	C	5130	C	5710	C	5380	C	5290	C	5320	C	5590	C	5680	C	5490	C	5490	C	5490	C
10WBG0032	I-710/Eastern off-ramp	Campus on-ramp	3760	C	3620	C	3610	C	3670	C	3650	C	3640	C	3690	C	3350	B	3390	B	3390	B	3390	B	3390	B
10WBG0033	Campus on-ramp	I-710 on-ramp	4460	C	4290	B	4280	B	4390	C	4340	B	4320	B	4380	B	4070	B	4100	B	4110	B	4110	B	4110	B
10WBG0034	I-710 on-ramp	Herbert on-ramp	6350	B	6500	B	6480	B	6400	B	6380	B	6360	B	6390	B	6030	B	5930	B	6170	B	6170	B	6170	B
10WBG0035	Herbert on-ramp	Soto off-ramp	6870	D	7030	D	7020	D	6910	D	6910	D	6880	D	6920	D	6570	D	6460	D	6700	D	6700	D	6700	D
10WBG0036	Soto off-ramp	WB I-10/SB I-5 off-ramp	5900	B	6040	B	6030	B	5950	B	5930	B	5890	B	5930	B	5490	B	5370	B	5630	B	5630	B	5630	B
10WBG0037	WB I-10/SB I-5 off-ramp	NB I-5 off-ramp	3900	B	3990	B	3940	B	3960	B	3770	B	3710	B	3790	B	3330	B	3280	B	3440	B	3440	B	3440	B
10WBG0038	NB I-5 off-ramp	West of NB I-5 off-ramp	1880	A	2010	A	2000	A	2060	A	2010	A	1950	A	2040	A	2140	B	2120	A	2130	A	2130	A	2130	A

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-96

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210EBGP0001	West of NB I-5 on-ramp	NB I-5 on-ramp	4860	D	4870	D	4890	D	4890	D	4920	D	4960	D	4880	D	5180	D	5160	D	5170	D		
210EBGP0002	NB I-5 on-ramp	Yarnell off-ramp	5410	C	5420	C	5450	C	5440	C	5460	C	5500	C	5420	C	5720	D	5710	D	5720	D		
210EBGP0003	Yarnell off-ramp	Yarnell on-ramp	5020	D	5020	D	5050	D	5020	D	5050	D	5120	D	5030	D	5310	D	5310	D	5260	D		
210EBGP0004	Yarnell on-ramp	Roxford off-ramp	5410	E	5420	E	5450	E	5420	E	5500	E	5520	E	5460	E	5770	E	5750	E	5730	E		
210EBGP0005	Roxford off-ramp	Roxford on-ramp	4990	D	4990	D	5040	D	5010	D	5060	D	5080	D	5040	D	5310	D	5300	D	5270	D		
210EBGP0006	Roxford on-ramp	Polk off-ramp	5390	E	5370	E	5410	E	5400	E	5410	E	5450	E	5420	E	5680	E	5680	E	5630	E		
210EBGP0007	Polk off-ramp	Polk on-ramp	5120	D	5110	D	5140	D	5120	D	5180	D	5210	D	5170	D	5470	E	5470	D	5410	D		
210EBGP0008	Polk on-ramp	Hubbard off-ramp	6410	F	6390	F	6410	F	6430	F	6480	F	6550	F	6500	F	6790	F	6770	F	6760	F		
210EBGP0009	Hubbard off-ramp	Hubbard on-ramp	6040	E	6030	E	6040	E	6070	E	6120	E	6190	E	6140	E	6430	F	6400	F	6390	F		
210EBGP0010	Hubbard on-ramp	Maclay off-ramp	7430	F	7420	F	7440	F	7460	F	7510	F	7580	F	7540	F	7790	F	7780	F	7770	F		
210EBGP0011	Maclay off-ramp	Maclay on-ramp	7010	F	7010	F	7020	F	7030	F	7110	F	7170	F	7120	F	7410	F	7400	F	7380	F		
210EBGP0012	Maclay on-ramp	WB SR118 off-ramp	8030	F	8020	F	8040	F	8040	F	8130	F	8190	F	8150	F	8420	F	8410	F	8400	F		
210EBGP0013	WB SR118 off-ramp	Paxton off-ramp	4770	D	4760	D	4770	D	4780	D	4890	D	4950	D	4920	D	5230	D	5230	D	5190	D		
210EBGP0014	Paxton off-ramp	Paxton on-ramp	4250	C	4240	C	4250	C	4260	C	4370	C	4440	C	4400	C	4720	D	4720	D	4680	D		
210EBGP0015	Paxton on-ramp	EB SR118 on-ramp	4410	C	4400	C	4410	C	4420	C	4570	D	4630	D	4590	D	4930	D	4930	D	4890	D		
210EBGP0016	EB SR118 on-ramp	Osborne off-ramp	6380	D	6360	D	6370	D	6390	D	6480	D	6540	D	6500	D	6710	D	6780	D	6690	D		
210EBGP0017	Osborne off-ramp	Osborne on-ramp	5850	C	5830	C	5840	C	5860	C	5950	C	6010	D	5970	C	6180	D	6250	D	6160	D		
210EBGP0018	Osborne on-ramp	Wheatland off-ramp	6310	D	6280	D	6290	D	6310	D	6400	D	6460	D	6420	D	6640	D	6710	D	6620	D		
210EBGP0019	Wheatland off-ramp	Wheatland on-ramp	6190	D	6170	D	6180	D	6200	D	6290	D	6350	D	6310	D	6530	D	6600	D	6510	D		
210EBGP0020	Wheatland on-ramp	Sunland off-ramp	6320	D	6300	D	6310	D	6330	D	6420	D	6480	D	6450	D	6660	D	6730	D	6650	D		
210EBGP0021	Sunland off-ramp	WB Sunland on-ramp	5760	C	5730	C	5750	C	5760	C	5860	C	5920	C	5880	C	6090	D	6170	D	6090	D		
210EBGP0022	WB Sunland on-ramp	EB Sunland on-ramp	6290	D	6270	D	6280	D	6290	D	6380	D	6460	D	6410	D	6600	D	6710	D	6610	D		
210EBGP0023	EB Sunland on-ramp	La Tuna Canyon off-ramp	6500	D	6480	D	6490	D	6500	D	6610	D	6670	D	6630	D	6840	D	6920	D	6840	D		
210EBGP0024	La Tuna Canyon off-ramp	La Tuna Canyon on-ramp	6450	D	6420	D	6440	D	6450	D	6550	D	6620	D	6580	D	6770	D	6850	D	6780	D		
210EBGP0025	La Tuna Canyon on-ramp	Lowell off-ramp	6870	D	6850	D	6860	D	6880	D	6960	D	7030	D	6990	D	7160	D	7250	D	7170	D		
210EBGP0026	Lowell off-ramp	Lowell/Honolulu on-ramp	6740	D	6720	D	6740	D	6750	D	6830	D	6910	D	6870	D	7040	D	7120	D	7040	D		
210EBGP0027	Lowell/Honolulu on-ramp	Pennsylvania off-ramp	8680	D	8700	D	8680	D	8700	D	8790	E	8880	E	8850	E	9020	E	9090	E	9000	E		
210EBGP0028	Pennsylvania off-ramp	Pennsylvania on-ramp	8330	F	8350	F	8330	F	8350	F	8460	F	8530	F	8510	F	8710	F	8790	F	8690	F		
210EBGP0029	Pennsylvania on-ramp	La Crescenta on-ramp	9450	F	9440	F	9450	F	9440	F	9610	F	9630	F	9600	F	9830	F	9940	F	9820	F		
210EBGP0030	La Crescenta on-ramp	Ocean View off-ramp	10,570	F	10,560	F	10,570	F	10,560	F	10,720	F	10,740	F	10,710	F	10,950	F	11,060	F	10,950	F		
210EBGP0031	Ocean View off-ramp	East Ocean View off-ramp	10,070	D	10,060	D	10,080	D	10,070	D	10,220	D	10,240	D	10,220	D	10,460	D	10,570	D	10,460	D		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-97

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - PM Peak Hour Analysis																						
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)	Single Bore (Toll-No Truck)	Single Bore (Toll-Express Bus)	Dual Bore (No Toll)	Dual Bore (No Toll-No Trucks)	Dual Bore (Toll)						
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
210EBGP0001	West of NB I-5 on-ramp	NB I-5 on-ramp	2900	B	2910	B	2910	B	2910	B	3080	B	3110	B	3020	B	3410	C	3360	C	3370	C
210EBGP0002	NB I-5 on-ramp	Yarnell off-ramp	3260	B	3280	B	3280	B	3260	B	3440	B	3470	B	3380	B	3780	B	3710	B	3740	B
210EBGP0003	Yarnell off-ramp	Yarnell on-ramp	2950	B	2960	B	2950	B	2950	B	3130	B	3160	B	3060	B	3460	C	3410	C	3420	C
210EBGP0004	Yarnell on-ramp	Roxford off-ramp	3130	C	3140	C	3140	C	3140	C	3320	C	3360	C	3260	C	3660	C	3600	C	3620	C
210EBGP0005	Roxford off-ramp	Roxford on-ramp	2770	B	2780	B	2770	B	2770	B	2960	B	2990	B	2900	B	3290	B	3230	B	3250	B
210EBGP0006	Roxford on-ramp	Polk off-ramp	3050	C	3070	C	3060	C	3060	C	3260	C	3290	C	3200	C	3580	C	3530	C	3540	C
210EBGP0007	Polk off-ramp	Polk on-ramp	2830	B	2840	B	2830	B	2830	B	3030	B	3070	B	2970	B	3370	C	3310	C	3330	C
210EBGP0008	Polk on-ramp	Hubbard off-ramp	3480	C	3490	C	3490	C	3490	C	3710	C	3740	C	3650	C	4040	D	3990	D	4000	D
210EBGP0009	Hubbard off-ramp	Hubbard on-ramp	3160	B	3170	B	3160	B	3160	B	3380	C	3420	C	3320	C	3720	C	3660	C	3680	C
210EBGP0010	Hubbard on-ramp	Maclay off-ramp	4030	D	4040	D	4030	D	4030	D	4260	D	4300	D	4200	D	4590	D	4540	D	4550	D
210EBGP0011	Maclay off-ramp	Maclay on-ramp	3730	C	3750	C	3740	C	3740	C	3970	C	4010	C	3910	C	4300	C	4250	C	4260	C
210EBGP0012	Maclay on-ramp	WB SR118 off-ramp	4400	C	4410	C	4400	C	4400	C	4650	C	4690	C	4590	C	4970	C	4920	C	4940	C
210EBGP0013	WB SR118 off-ramp	Paxton off-ramp	2920	C	2940	C	2930	C	2930	C	3190	C	3220	C	3130	C	3510	C	3460	C	3480	C
210EBGP0014	Paxton off-ramp	Paxton on-ramp	2530	B	2540	B	2540	B	2530	B	2800	B	2830	B	2740	B	3120	B	3070	B	3090	B
210EBGP0015	Paxton on-ramp	EB SR118 on-ramp	2720	B	2740	B	2730	B	2730	B	3000	B	3040	B	2940	B	3320	C	3270	C	3280	C
210EBGP0016	EB SR118 on-ramp	Osborne off-ramp	4900	C	4910	C	4910	C	4890	C	5100	C	5120	C	5050	C	5360	C	5380	D	5350	C
210EBGP0017	Osborne off-ramp	Osborne on-ramp	4440	C	4450	C	4450	C	4420	C	4630	C	4650	C	4580	C	4900	C	4920	C	4890	C
210EBGP0018	Osborne on-ramp	Wheatland off-ramp	4760	C	4770	C	4770	C	4750	C	4970	C	4990	C	4920	C	5250	C	5270	C	5240	C
210EBGP0019	Wheatland off-ramp	Wheatland on-ramp	4650	C	4660	C	4660	C	4640	C	4860	C	4880	C	4810	C	5140	C	5160	C	5130	C
210EBGP0020	Wheatland on-ramp	Sunland off-ramp	4740	C	4750	C	4750	C	4730	C	4950	C	4970	C	4900	C	5230	C	5250	D	5220	C
210EBGP0021	Sunland off-ramp	WB Sunland on-ramp	3990	B	4000	B	4000	B	3980	B	4200	B	4220	B	4150	B	4500	C	4510	C	4480	C
210EBGP0022	WB Sunland on-ramp	EB Sunland on-ramp	4210	B	4220	B	4210	B	4190	B	4410	C	4430	C	4360	B	4690	C	4720	C	4690	C
210EBGP0023	EB Sunland on-ramp	La Tuna Canyon off-ramp	4310	C	4330	C	4320	C	4300	C	4530	C	4540	C	4480	C	4820	C	4840	C	4810	C
210EBGP0024	La Tuna Canyon off-ramp	La Tuna Canyon on-ramp	4220	B	4230	B	4230	B	4210	B	4420	C	4430	C	4370	B	4680	C	4700	C	4670	C
210EBGP0025	La Tuna Canyon on-ramp	Lowell off-ramp	4830	C	4850	C	4840	C	4820	C	5040	C	5040	C	4990	C	5290	C	5320	C	5290	C
210EBGP0026	Lowell off-ramp	Lowell/Honolulu on-ramp	4630	C	4640	C	4640	C	4620	C	4850	C	4860	C	4800	C	5130	C	5160	C	5130	C
210EBGP0027	Lowell/Honolulu on-ramp	Pennsylvania off-ramp	5740	C	5760	C	5760	C	5740	C	5960	C	5970	C	5910	C	6230	C	6270	C	6240	C
210EBGP0028	Pennsylvania off-ramp	Pennsylvania on-ramp	5240	C	5260	C	5260	C	5240	C	5460	C	5470	C	5410	C	5740	C	5780	C	5750	C
210EBGP0029	Pennsylvania on-ramp	La Crescenta on-ramp	5800	C	5820	C	5820	C	5800	C	6030	C	6040	C	5990	C	6330	D	6360	D	6330	D
210EBGP0030	La Crescenta on-ramp	Ocean View off-ramp	6310	C	6320	C	6320	C	6300	C	6550	C	6560	C	6510	C	6850	D	6890	C	6860	C
210EBGP0031	Ocean View off-ramp	East Ocean View off-ramp	5730	B	5750	B	5750	B	5730	B	5980	B	5990	B	5930	B	6280	B	6320	B	6290	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-98

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound I-210 (I-5 to SR 2)

SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0056	East of Ocean View on-ramp	Ocean View on-ramp	4840	B	4870	B	4860	B	4920	B	4880	B	4870	B	4890	B	5040	B	5130	B	5070	B		
210WBG0057	Ocean View on-ramp	La Crescenta off-ramp	5270	B	5300	B	5290	B	5360	B	5310	B	5300	B	5320	B	5470	B	5560	B	5500	B		
210WBG0058	La Crescenta off-ramp	Pennsylvania off-ramp	4720	C	4760	C	4740	C	4810	C	4760	C	4750	C	4780	C	4920	C	5010	C	4950	C		
210WBG0059	Pennsylvania off-ramp	Pennsylvania on-ramp	4270	B	4300	B	4290	B	4360	B	4310	B	4300	B	4320	B	4470	B	4550	B	4500	B		
210WBG0060	Pennsylvania on-ramp	Lowell off-ramp	4780	B	4810	B	4800	B	4870	B	4820	B	4810	B	4830	B	4970	B	5060	B	5000	B		
210WBG0061	Lowell off-ramp	Honolulu on-ramp	3530	B	3550	B	3540	B	3610	B	3560	B	3550	B	3570	B	3710	B	3790	B	3730	B		
210WBG0062	Honolulu on-ramp	La Tuna Canyon off-ramp	3730	C	3760	C	3740	C	3810	C	3760	C	3750	C	3780	C	3920	C	3990	C	3930	C		
210WBG0063	La Tuna Canyon off-ramp	EB La Tuna Canyon on-ramp	3280	B	3310	B	3300	B	3370	B	3320	B	3310	B	3330	B	3480	B	3550	B	3490	B		
210WBG0064	EB La Tuna Canyon on-ramp	WB La Tuna Canyon on-ramp	3300	B	3330	B	3310	B	3380	B	3330	B	3320	B	3350	B	3490	B	3560	B	3500	B		
210WBG0065	WB La Tuna Canyon on-ramp	Sunland off-ramp	3360	B	3390	B	3380	B	3440	B	3400	B	3390	B	3410	B	3560	B	3630	B	3570	B		
210WBG0066	Sunland off-ramp	EB Sunland on-ramp	3120	B	3150	B	3130	B	3200	B	3150	B	3140	B	3160	B	3310	B	3380	B	3320	B		
210WBG0067	EB Sunland on-ramp	WB Sunland on-ramp	3210	B	3250	B	3230	B	3290	B	3260	B	3250	B	3250	B	3400	B	3470	B	3370	B		
210WBG0068	WB Sunland on-ramp	Wheatland off-ramp	3320	B	3350	B	3330	B	3400	B	3350	B	3340	B	3360	B	3500	B	3560	B	3500	B		
210WBG0069	Wheatland off-ramp	Wheatland on-ramp	3250	B	3280	B	3270	B	3330	B	3280	B	3270	B	3300	B	3430	B	3500	B	3440	B		
210WBG0070	Wheatland on-ramp	Osborne off-ramp	3340	B	3370	B	3360	B	3430	B	3370	B	3360	B	3390	B	3520	B	3590	B	3530	B		
210WBG0071	Osborne off-ramp	Osborne on-ramp	3120	B	3150	B	3140	B	3210	B	3150	B	3130	B	3160	B	3300	B	3360	B	3300	B		
210WBG0072	Osborne on-ramp	WB SR118 off-ramp	3730	B	3760	B	3740	B	3810	B	3760	B	3740	B	3770	B	3900	B	3960	B	3910	B		
210WBG0073	WB SR118 off-ramp	Paxton off-ramp	2180	B	2210	B	2200	B	2260	B	2240	B	2200	B	2250	B	2410	B	2420	B	2400	B		
210WBG0074	Paxton off-ramp	Paxton on-ramp	2010	B	2040	B	2020	B	2090	B	2060	B	2010	B	2060	B	2220	B	2230	B	2200	B		
210WBG0075	Paxton on-ramp	EB SR118 on-ramp	2530	B	2560	B	2540	B	2600	B	2570	B	2530	B	2580	B	2720	B	2740	B	2710	B		
210WBG0076	EB SR118 on-ramp	Maclay off-ramp	3830	C	3860	C	3850	C	3910	C	3860	C	3830	C	3870	C	4030	C	4030	C	4010	C		
210WBG0077	Maclay off-ramp	Maclay on-ramp	3160	B	3190	B	3170	B	3250	B	3180	B	3140	B	3180	B	3340	C	3340	C	3320	C		
210WBG0078	Maclay on-ramp	Hubbard off-ramp	3360	C	3390	C	3370	C	3450	C	3370	C	3340	C	3370	C	3530	C	3530	C	3510	C		
210WBG0079	Hubbard off-ramp	Hubbard on-ramp	2640	B	2670	B	2650	B	2730	B	2640	B	2600	B	2650	B	2810	B	2810	B	2780	B		
210WBG0080	Hubbard on-ramp	Polk off-ramp	2950	C	2980	C	2960	C	3050	C	2960	C	2920	C	2960	C	3120	C	3130	C	3100	C		
210WBG0081	Polk off-ramp	Polk on-ramp	2430	B	2460	B	2440	B	2530	B	2420	B	2370	B	2420	B	2580	B	2590	B	2560	B		
210WBG0082	Polk on-ramp	Roxford off-ramp	2840	C	2870	C	2850	C	2940	C	2830	C	2780	C	2830	C	3000	C	3000	C	2970	C		
210WBG0083	Roxford off-ramp	Roxford on-ramp	2420	B	2450	B	2430	B	2520	B	2410	B	2360	B	2410	B	2570	B	2570	B	2550	B		
210WBG0084	Roxford on-ramp	Yarnell off-ramp	2860	C	2890	C	2860	C	2960	C	2840	C	2790	C	2850	C	3000	C	3010	C	2990	C		
210WBG0085	Yarnell off-ramp	Yarnell on-ramp	2590	B	2630	B	2600	B	2700	B	2560	B	2510	B	2570	B	2720	B	2730	B	2710	B		
210WBG0086	Yarnell on-ramp	I-5 SB off-ramp	2890	B	2970	B	2890	B	3010	B	2850	B	2800	B	2900	B	3020	B	3050	B	3050	B		
210WBG0087	I-5 SB off-ramp	West of I-5 SB off-ramp	2470	B	2500	B	2470	B	2560	B	2450	B	2390	B	2450	B	2610	B	2600	B	2570	B		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-99

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound I-210 (I-5 to SR 2)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0056	East of Ocean View on-ramp	Ocean View on-ramp	8480	C	8450	C	8440	C	8510	C	8550	C	8560	C	8570	C	8740	C	8800	C	8730	C		
210WBG0057	Ocean View on-ramp	La Crescenta off-ramp	8990	D	8960	C	8950	C	9020	D	9060	D	9070	D	9070	D	9230	D	9290	D	9210	D		
210WBG0058	La Crescenta off-ramp	Pennsylvania off-ramp	7980	D	7960	D	7950	D	8010	D	8050	D	8050	D	8070	D	8210	E	8250	E	8190	E		
210WBG0059	Pennsylvania off-ramp	Pennsylvania on-ramp	7090	C	7110	C	7060	C	7130	C	7160	C	7180	C	7170	C	7310	C	7350	C	7280	C		
210WBG0060	Pennsylvania on-ramp	Lowell off-ramp	7460	C	7480	C	7430	C	7510	C	7500	C	7520	C	7520	C	7620	D	7680	D	7600	D		
210WBG0061	Lowell off-ramp	Honolulu on-ramp	6140	D	6160	D	6130	D	6180	D	6160	D	6180	D	6180	D	6250	D	6330	D	6250	D		
210WBG0062	Honolulu on-ramp	La Tuna Canyon off-ramp	6300	D	6310	D	6270	D	6330	D	6290	D	6320	D	6310	D	6370	D	6450	D	6360	D		
210WBG0063	La Tuna Canyon off-ramp	EB La Tuna Canyon on-ramp	6010	C	6020	C	5980	C	6040	C	5990	C	6030	C	6010	C	6090	D	6170	D	6080	D		
210WBG0064	EB La Tuna Canyon on-ramp	WB La Tuna Canyon on-ramp	6020	C	6030	C	6000	C	6050	C	6020	C	6050	C	6050	C	6120	D	6200	D	6110	D		
210WBG0065	WB La Tuna Canyon on-ramp	Sunland off-ramp	6080	D	6100	D	6070	D	6120	D	6120	D	6140	D	6140	D	6250	D	6310	D	6240	D		
210WBG0066	Sunland off-ramp	EB Sunland on-ramp	5560	C	5570	C	5550	C	5590	C	5590	C	5610	C	5610	C	5720	C	5780	C	5710	C		
210WBG0067	EB Sunland on-ramp	WB Sunland on-ramp	5840	C	5850	C	5830	C	5870	C	5860	C	5870	C	5870	C	5970	C	6020	C	5960	C		
210WBG0068	WB Sunland on-ramp	Wheatland off-ramp	6040	D	6060	D	6030	D	6080	D	6050	D	6070	D	6070	D	6160	D	6210	D	6150	D		
210WBG0069	Wheatland off-ramp	Wheatland on-ramp	5910	C	5920	C	5890	C	5940	C	5910	C	5930	C	5930	C	6020	C	6070	D	6000	C		
210WBG0070	Wheatland on-ramp	Osborne off-ramp	6010	D	6030	D	6000	D	6050	D	6020	D	6040	D	6040	D	6120	D	6180	D	6110	D		
210WBG0071	Osborne off-ramp	Osborne on-ramp	5730	C	5750	C	5730	C	5770	C	5790	C	5810	C	5800	C	5910	C	5970	C	5900	C		
210WBG0072	Osborne on-ramp	WB SR118 off-ramp	6180	D	6190	D	6160	D	6210	D	6230	D	6260	D	6250	D	6350	D	6400	D	6340	D		
210WBG0073	WB SR118 off-ramp	Paxton off-ramp	4040	B	4040	B	4000	B	4060	B	4180	C	4220	C	4200	C	4330	C	4310	C	4310	C		
210WBG0074	Paxton off-ramp	Paxton on-ramp	3840	C	3840	C	3810	C	3870	C	4000	C	4040	C	4020	C	4160	C	4140	C	4130	C		
210WBG0075	Paxton on-ramp	EB SR118 on-ramp	4440	C	4430	C	4390	C	4470	C	4590	D	4620	D	4600	D	4720	D	4700	D	4690	D		
210WBG0076	EB SR118 on-ramp	Maclay off-ramp	7280	F	7250	F	7230	F	7310	F	7390	F	7410	F	7410	F	7490	F	7470	F	7470	F		
210WBG0077	Maclay off-ramp	Maclay on-ramp	6280	E	6250	E	6230	E	6310	F	6370	F	6390	F	6390	F	6490	F	6460	F	6470	F		
210WBG0078	Maclay on-ramp	Hubbard off-ramp	6590	F	6550	F	6540	F	6620	F	6680	F	6700	F	6690	F	6790	F	6760	F	6770	F		
210WBG0079	Hubbard off-ramp	Hubbard on-ramp	5640	E	5610	E	5600	E	5680	E	5730	E	5750	E	5750	E	5850	E	5810	E	5810	E		
210WBG0080	Hubbard on-ramp	Polk off-ramp	5840	E	5810	E	5800	E	5880	E	5930	F	5950	F	5950	F	6050	F	6010	F	6010	F		
210WBG0081	Polk off-ramp	Polk on-ramp	5150	D	5130	D	5110	D	5200	D	5250	D	5270	D	5260	D	5370	D	5340	D	5330	D		
210WBG0082	Polk on-ramp	Roxford off-ramp	5430	E	5420	E	5390	E	5490	E	5540	E	5560	E	5560	E	5660	E	5620	E	5620	E		
210WBG0083	Roxford off-ramp	Roxford on-ramp	5110	D	5090	D	5040	D	5140	D	5190	D	5240	D	5200	D	5290	D	5290	D	5280	D		
210WBG0084	Roxford on-ramp	Yarnell off-ramp	5510	E	5470	E	5450	E	5570	E	5570	E	5600	E	5560	E	5630	E	5630	E	5630	E		
210WBG0085	Yarnell off-ramp	Yarnell on-ramp	5180	D	5190	D	5170	D	5210	D	5190	D	5220	D	5240	D	5300	D	5260	D	5290	D		
210WBG0086	Yarnell on-ramp	I-5 SB off-ramp	5500	C	5500	C	5490	C	5540	C	5520	C	5510	C	5520	C	5600	C	5560	C	5580	C		
210WBG0087	I-5 SB off-ramp	West of I-5 SB off-ramp	4350	C	4360	C	4340	C	4390	C	4390	C	4390	C	4390	C	4470	C	4430	C	4460	C		

NOTES:
 Volume is reported in **mean** vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-100

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 2 to SR 134)

SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - AM Peak Hour Analysis																														
Freeway Segment			2035 No Build Alternative				2035 TSM/TDM Alternative				2035 BRT Alternative				2035 LRT Alternative				2035 Freeway Tunnel Alternative											
			Volume		LOS		Volume		LOS		Volume		LOS		Volume		LOS		Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)	
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
210EBGP0031	West of SR 2 off-ramp	SR 2 off-ramp	10,070	D	10,060	D	10,080	D	10,070	D	10,220	D	10,240	D	10,220	D	10,460	D	10,570	D	10,460	D								
210EBGP0032	SR 2 off-ramp	Ocean View on-ramp	4510	C	4500	C	4510	C	4520	C	4980	C	5010	C	4960	C	5410	C	5440	C	5330	C								
210EBGP0033	Ocean View on-ramp	SR 2 on-ramp	5220	C	5220	C	5230	C	5240	C	5720	C	5750	C	5700	C	6120	D	6170	D	6050	D								
210EBGP0034	SR 2 on-ramp	Angeles Crest Hwy off-ramp	5920	C	5900	C	5910	C	5920	C	6250	C	6290	C	6240	C	6570	C	6660	C	6530	C								
210EBGP0035	Angeles Crest Hwy off-ramp	SB Angeles Crest Hwy on-ramp	5440	C	5430	C	5450	C	5460	C	5930	C	5960	C	5920	C	6340	D	6390	D	6270	D								
210EBGP0036	SB Angeles Crest Hwy on-ramp	NB Angeles Crest Hwy on-ramp	5880	C	5910	C	5920	C	5900	C	6450	D	6500	D	6430	D	6850	D	6930	D	6800	D								
210EBGP0037	NB Angeles Crest Hwy on-ramp	Gould off-ramp	6090	C	6140	C	6150	C	6120	C	6780	C	6840	C	6760	C	7190	D	7280	D	7160	D								
210EBGP0038	Gould off-ramp	Foothill on-ramp	5340	C	5390	C	5400	C	5360	C	6030	D	6090	D	6010	D	6440	D	6530	D	6420	D								
210EBGP0039	Foothill on-ramp	Berkshire off-ramp	5840	C	5900	C	5920	C	5870	C	6580	C	6620	C	6550	C	7010	D	7120	D	6980	D								
210EBGP0040	Berkshire off-ramp	Berkshire on-ramp	5310	C	5390	C	5400	C	5350	C	5950	C	6090	D	5910	C	6150	D	6350	D	6130	D								
210EBGP0041	Berkshire on-ramp	Arroyo/Windsor off-ramp	5510	D	5580	D	5600	D	5550	D	6160	D	6310	D	6120	D	6370	D	6610	D	6390	D								
210EBGP0042	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	5020	C	5100	C	5110	C	5060	C	5810	C	5860	C	5770	C	6130	D	6490	D	6370	D								
210EBGP0043	Arroyo/Windsor on-ramp	Lincoln/Washington off-ramp	5570	C	5650	C	5660	C	5620	C	6310	C	6350	C	6270	C	6700	C	6980	D	6860	C								
210EBGP0044	Lincoln/Washington off-ramp	Lincoln on-ramp	5360	C	5450	C	5450	C	5410	C	6080	D	6120	D	6040	D	6480	D	6770	D	6640	D								
210EBGP0045	Lincoln on-ramp	Soto/Mountain off-ramp	6240	C	6330	C	6340	C	6290	C	6980	D	7000	D	6920	D	7450	D	7730	D	7570	D								
210EBGP0046	Soto/Mountain off-ramp	Soto/Mountain on-ramp	6080	D	6190	D	6190	D	6140	D	6900	D	6910	D	6840	D	7400	E	7660	E	7510	E								
210EBGP0047	Soto/Mountain on-ramp	WB I-210/EB SR 134 off-ramp	6640	F	6770	F	6760	F	6710	F	7460	F	7460	F	7390	F	8090	F	8380	F	8150	F								
210EBGP0048	WB I-210/EB SR 134 off-ramp	Colorado off-ramp	730	A	850	A	880	A	840	A	2740	C	3120	D	3050	D	4360	F	4440	F	4130	E								
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp	140	A	260	A	270	A	220	A	1470	B	1740	B	1690	B	3500	D	3530	D	3200	D								
210EBGP0050	WB SR 134/WB I-210 on-ramp	EB SR 134 on-ramp	1620	B	1720	B	1740	B	1700	B																				
210EBGP0051	EB SR 134 on-ramp	Del Mar off-ramp	2320	C	2450	C	2470	C	2450	C																				
210EBGP0052	Del Mar off-ramp	South of Del Mar off-ramp	1620	B	1550	B	1520	B	1500	B																				

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-101

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 2 to SR 134)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative				2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative											
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210EBGP0031	West of SR 2 off-ramp	SR 2 off-ramp	5730	B	5750	B	5750	B	5730	B	5980	B	5990	B	5930	B	6280	B	6320	B	6290	B		
210EBGP0032	SR 2 off-ramp	Ocean View on-ramp	3460	B	3470	B	3480	B	3450	B	4040	B	4040	B	3980	B	4410	C	4420	C	4400	B		
210EBGP0033	Ocean View on-ramp	SR 2 on-ramp	3860	B	3880	B	3880	B	3860	B	4460	C	4460	C	4400	B	4800	C	4820	C	4790	C		
210EBGP0034	SR 2 on-ramp	Angeles Crest Hwy off-ramp	4480	B	4440	B	4440	B	4440	B	4970	B	4990	B	4930	B	5250	C	5290	C	5250	C		
210EBGP0035	Angeles Crest Hwy off-ramp	SB Angeles Crest Hwy on-ramp	3860	B	3880	B	3880	B	3860	B	4470	C	4480	C	4420	C	4830	C	4870	C	4830	C		
210EBGP0036	SB Angeles Crest Hwy on-ramp	NB Angeles Crest Hwy on-ramp	4030	B	4060	B	4060	B	4030	B	4710	C	4720	C	4660	C	5070	C	5120	C	5070	C		
210EBGP0037	NB Angeles Crest Hwy on-ramp	Gould off-ramp	4350	B	4390	B	4390	B	4350	B	5140	B	5140	B	5080	B	5530	C	5560	C	5520	C		
210EBGP0038	Gould off-ramp	Foothill on-ramp	4000	B	4040	B	4040	B	4000	B	4780	C	4780	C	4730	C	5180	C	5210	C	5160	C		
210EBGP0039	Foothill on-ramp	Berkshire off-ramp	4600	B	4650	B	4650	B	4610	B	5410	C	5410	C	5350	C	5810	C	5850	C	5800	C		
210EBGP0040	Berkshire off-ramp	Berkshire on-ramp	4410	C	4460	C	4460	C	4420	C	5080	C	5130	C	5030	C	5210	C	5470	C	5320	C		
210EBGP0041	Berkshire on-ramp	Arroyo/Windsor off-ramp	4810	C	4850	C	4850	C	4810	C	5500	D	5560	D	5460	D	5640	D	5910	D	5750	D		
210EBGP0042	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	4030	B	4070	B	4070	B	4020	B	4860	C	4860	C	4800	C	5310	C	5340	C	5300	C		
210EBGP0043	Arroyo/Windsor on-ramp	Lincoln/Washington off-ramp	4480	B	4520	B	4530	B	4480	B	5310	C	5300	C	5240	C	5740	C	5800	C	5760	C		
210EBGP0044	Lincoln/Washington off-ramp	Lincoln on-ramp	4200	B	4240	B	4250	B	4200	B	5030	C	5000	C	4950	C	5470	C	5520	C	5480	C		
210EBGP0045	Lincoln on-ramp	Soto/Mountain off-ramp	4790	B	4840	B	4840	B	4790	B	5690	C	5630	C	5570	C	6170	C	6200	C	6170	C		
210EBGP0046	Soto/Mountain off-ramp	Soto/Mountain on-ramp	4570	C	4620	C	4620	C	4570	C	5510	C	5450	C	5380	C	6020	C	6030	C	6000	C		
210EBGP0047	Soto/Mountain on-ramp	WB I-210/EB SR 134 off-ramp	4860	F	4920	F	4920	F	4870	F	5920	F	5770	F	5700	F	6440	D	6490	F	6400	D		
210EBGP0048	WB I-210/EB SR 134 off-ramp	Colorado off-ramp	790	A	850	A	850	A	810	A	2750	C	2520	C	2460	C	3550	D	3590	D	3450	D		
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp	370	A	430	A	430	A	390	A	2080	B	1770	B	1720	B	3000	C	3000	C	2830	C		
210EBGP0050	WB SR 134/WB I-210 on-ramp	EB SR 134 on-ramp	1600	B	1640	B	1660	B	1600	B														
210EBGP0051	EB SR 134 on-ramp	Del Mar off-ramp	2110	C	2180	C	2200	C	2160	C														
210EBGP0052	Del Mar off-ramp	South of Del Mar off-ramp	1480	B	1340	A	1350	A	1320	A														

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-102

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound I-210 (SR 2 to SR 134)

SR 710 North Study, Los Angeles County, California

Freeway Segment		Westbound Interstate 210 - AM Peak Hour Analysis																					
		2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
		Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	
210WBG0036	South of Del Mar on-ramp	Del Mar on-ramp	540	A	550	A	540	A	550	A													
210WBG0037	Del Mar on-ramp	EB I-210/EB SR 134 off-ramp	1570	A	1590	A	1580	A	1560	A													
210WBG0038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp	950	A	1010	A	1010	A	970	A	1800	B	1760	B	1800	B	2940	C	2900	C	2820	C	
210WBG0039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp	1360	A	1420	A	1400	A	1370	A	2650	B	2610	B	2650	B	3720	C	3680	C	3620	C	
210WBG0040	WB I-210/EB SR 134 on-ramp	Soto/Mountain off-ramp	4660	B	4750	B	4700	B	4680	B	5910	B	5910	B	5930	B	6570	B	6580	B	6390	B	
210WBG0041	Soto/Mountain off-ramp	Soto/Mountain on-ramp	4320	B	4390	B	4360	B	4360	B	5150	B	5160	B	5190	B	5610	C	5630	C	5600	C	
210WBG0042	Soto/Mountain on-ramp	Lincoln off-ramp	4560	B	4620	B	4600	B	4610	B	5340	B	5360	B	5380	B	5770	C	5800	C	5770	C	
210WBG0043	Lincoln off-ramp	Lincoln on-ramp	3890	B	3960	B	3940	B	3960	B	4590	C	4590	C	4600	C	5030	C	5070	C	5050	C	
210WBG0044	Lincoln on-ramp	Arroyo/Windsor off-ramp	4140	B	4200	B	4190	B	4210	B	4820	B	4830	B	4830	B	5250	C	5290	C	5280	C	
210WBG0045	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	3460	B	3520	B	3510	B	3550	B	4170	B	4160	B	4180	B	4550	C	4600	C	4570	C	
210WBG0046	Arroyo/Windsor on-ramp	Berkshire off-ramp	4170	C	4220	C	4210	C	4270	C	4850	C	4850	C	4850	C	5210	C	5270	D	5230	C	
210WBG0047	Berkshire off-ramp	Berkshire on-ramp	3800	B	3850	B	3830	B	3900	B	4450	C	4440	C	4450	C	4780	C	4840	C	4790	C	
210WBG0048	Berkshire on-ramp	Foothill off-ramp	4270	B	4340	B	4320	B	4390	B	4970	B	4970	B	4990	B	5360	C	5410	C	5380	C	
210WBG0049	Foothill off-ramp	Gould on-ramp	3170	B	3210	B	3190	B	3280	B	3830	B	3820	B	3840	B	4180	B	4220	B	4200	B	
210WBG0050	Gould on-ramp	Angeles Crest Hwy off-ramp	3640	B	3680	B	3660	B	3750	B	4290	B	4290	B	4300	B	4630	B	4680	B	4660	B	
210WBG0051	Angeles Crest Hwy off-ramp	NB Angeles Crest Hwy on-ramp	3190	B	3220	B	3200	B	3310	B	3650	B	3640	B	3660	B	3920	B	3990	B	3950	B	
210WBG0052	NB Angeles Crest Hwy on-ramp	SB Angeles Crest Hwy on-ramp	3320	B	3340	B	3330	B	3430	B	3750	B	3760	B	3780	B	4010	B	4080	B	4050	B	
210WBG0053	SB Angeles Crest Hwy on-ramp	SR 2 off-ramp	3700	B	3670	B	3640	B	3790	B	4000	B	4030	B	4030	B	4200	B	4290	B	4260	B	
210WBG0054	SR 2 off-ramp	Ocean View off-ramp	3170	B	3200	B	3190	B	3280	B	3630	C	3600	C	3640	C	3870	C	3940	D	3890	C	
210WBG0055	Ocean View off-ramp	SR 2 on-ramp	2780	B	2820	B	2800	B	2890	B	3160	B	3110	B	3160	B	3410	B	3460	B	3410	B	
210WBG0056	SR 2 on-ramp	West of SR 2 on-ramp	4840	B	4870	B	4860	B	4920	B	4880	B	4870	B	4890	B	5040	B	5130	B	5070	B	

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-103

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound I-210 (SR 2 to SR 134)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - PM Peak Hour Analysis																									
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative														
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)				
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	
210WBG0036	South of Del Mar on-ramp	Del Mar on-ramp	570	A	590	A	590	A	580	A															
210WBG0037	Del Mar on-ramp	EB I-210/EB SR 134 off-ramp	1930	A	1940	A	1970	A	1950	A															
210WBG0038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp	960	A	970	A	1000	A	980	A	1980	B	2100	B	1990	B	4130	E	4070	E	3900	E			
210WBG0039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp	1620	A	1660	A	1670	A	1650	A	2820	B	2920	B	2820	B	4870	D	4820	D	4650	D			
210WBG0040	WB I-210/EB SR 134 on-ramp	Soto/Mountain off-ramp	6800	B	6850	B	6850	B	6840	B	7050	C	7280	C	7050	C	8820	C	8770	C	8660	C			
210WBG0041	Soto/Mountain off-ramp	Soto/Mountain on-ramp	6330	C	6390	C	6400	C	6390	C	6400	C	6620	C	6410	C	7870	D	7880	D	7770	D			
210WBG0042	Soto/Mountain on-ramp	Lincoln off-ramp	6600	C	6660	C	6650	C	6650	C	6830	C	7050	C	6820	C	8010	D	8040	D	7930	D			
210WBG0043	Lincoln off-ramp	Lincoln on-ramp	5560	C	5640	C	5630	C	5640	C	6040	C	6150	D	6040	C	6930	D	6970	D	6870	D			
210WBG0044	Lincoln on-ramp	Arroyo/Windsor off-ramp	5770	C	5850	C	5840	C	5840	C	6250	C	6370	C	6250	C	7100	D	7170	D	7060	D			
210WBG0045	Arroyo/Windsor off-ramp	Arroyo/Windsor on-ramp	5280	C	5360	C	5350	C	5360	C	5760	C	5880	C	5760	C	6510	D	6580	D	6470	D			
210WBG0046	Arroyo/Windsor on-ramp	Berkshire off-ramp	5870	D	5950	D	5940	D	5940	D	6270	D	6420	D	6270	D	6900	D	7010	D	6890	D			
210WBG0047	Berkshire off-ramp	Berkshire on-ramp	5740	C	5810	C	5800	C	5810	C	6180	D	6330	D	6170	D	6820	D	6920	D	6800	D			
210WBG0048	Berkshire on-ramp	Foothill off-ramp	6270	C	6350	C	6330	C	6350	C	6870	C	6990	D	6870	C	7520	D	7590	D	7480	D			
210WBG0049	Foothill off-ramp	Gould on-ramp	5640	C	5710	C	5690	C	5710	C	6130	D	6220	D	6130	D	6740	D	6780	D	6680	D			
210WBG0050	Gould on-ramp	Angeles Crest Hwy off-ramp	6200	C	6270	C	6250	C	6270	C	6690	C	6780	C	6690	C	7290	D	7330	D	7220	D			
210WBG0051	Angeles Crest Hwy off-ramp	NB Angeles Crest Hwy on-ramp	5650	C	5660	C	5650	C	5690	C	6060	C	6140	D	6050	C	6640	D	6670	D	6580	D			
210WBG0052	NB Angeles Crest Hwy on-ramp	SB Angeles Crest Hwy on-ramp	6070	D	6070	D	6060	C	6100	D	6470	D	6560	D	6470	D	7050	D	7080	D	6990	D			
210WBG0053	SB Angeles Crest Hwy on-ramp	SR 2 off-ramp	6260	C	6240	C	6230	C	6290	C	6590	C	6680	C	6580	C	7100	D	7170	D	7070	D			
210WBG0054	SR 2 off-ramp	Ocean View off-ramp	5410	D	5410	D	5400	D	5440	D	5800	D	5880	D	5800	D	6360	D	6400	D	6310	D			
210WBG0055	Ocean View off-ramp	SR 2 on-ramp	4830	C	4830	C	4820	C	4860	C	5260	C	5360	C	5250	C	5840	C	5870	C	5780	C			
210WBG0056	SR 2 on-ramp	West of SR 2 on-ramp	8480	C	8450	C	8440	C	8510	C	8550	C	8560	C	8570	C	8740	C	8800	C	8730	C			

NOTES:
 Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-104

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 134 to I-605)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210EBGP0053	West of EB I-210 on-ramp	EB I-210 on-ramp	5450	B	5390	B	5360	B	5440	B	5960	C	6000	C	5990	C	6250	C	6180	C	6210	C		
210EBGP0054	EB I-210 on-ramp	Marengo on-ramp	8880	C	8820	C	8760	C	8830	C	9280	C	9330	C	9320	C	9040	C	9090	C	9170	C		
210EBGP0055	Marengo on-ramp	Lake off-ramp	9650	E	9610	E	9560	E	9600	E	10,060	F	10,110	F	10,090	F	9810	E	9860	E	9960	E		
210EBGP0056	Lake off-ramp	Lake on-ramp	8140	D	8080	D	8050	D	8090	D	8310	D	8350	D	8350	D	8020	D	8060	D	8170	D		
210EBGP0057	Lake on-ramp	Hill off-ramp	9020	E	9010	E	8960	E	8990	E	9020	E	9040	E	9100	E	8890	E	8920	E	9080	E		
210EBGP0058	Hill off-ramp	Hill on-ramp	8070	D	8060	D	8020	D	8050	D	7970	C	7990	D	8060	D	7770	C	7800	C	7970	C		
210EBGP0059	Hill on-ramp	Allen on-ramp	8490	D	8490	D	8430	D	8470	D	8390	D	8390	D	8460	D	8200	D	8210	D	8390	D		
210EBGP0060	Allen on-ramp	Sierra Madre/Altadena off-ramp	8940	E	8920	E	8890	D	8910	D	8830	D	8840	D	8910	D	8640	D	8660	D	8830	D		
210EBGP0061	Sierra Madre/Altadena off-ramp	San Gabriel off-ramp	8060	D	8050	D	8010	D	8030	D	7860	D	7870	D	7940	D	7640	D	7660	D	7830	D		
210EBGP0062	San Gabriel off-ramp	San Gabriel on-ramp	7570	C	7550	C	7520	C	7530	C	7370	C	7370	C	7440	C	7170	C	7210	C	7360	C		
210EBGP0063	San Gabriel on-ramp	Madre off-ramp	8160	D	8170	D	8180	D	8190	D	8010	D	8050	D	8040	D	7760	D	7800	D	7940	D		
210EBGP0064	Madre off-ramp	SB Rosemead off-ramp	7480	D	7460	D	7480	D	7500	D	7360	C	7420	D	7380	C	7180	C	7230	C	7310	C		
210EBGP0065	SB Rosemead off-ramp	Madre on-ramp	7060	C	7060	C	7070	C	7060	C	6940	C	7020	C	6980	C	6800	C	6830	C	6930	C		
210EBGP0066	Madre on-ramp	NB Rosemead/Michillinda off-ramp	7340	C	7350	C	7360	C	7350	C	7250	C	7320	C	7270	C	7110	C	7130	C	7220	C		
210EBGP0067	NB Rosemead/Michillinda off-ramp	Rosemead on-ramp	7010	D	7010	D	7010	D	7020	D	6890	D	6960	D	6910	D	6750	D	6780	D	6870	D		
210EBGP0068	Rosemead on-ramp	Michillinda on-ramp	7180	D	7170	D	7180	D	7170	D	7050	D	7120	D	7070	D	6920	D	6950	D	7030	D		
210EBGP0069	Michillinda on-ramp	Baldwin off-ramp	7480	D	7480	D	7480	D	7480	D	7350	C	7420	D	7380	C	7220	C	7260	C	7340	C		
210EBGP0070	Baldwin off-ramp	Baldwin on-ramp	6870	D	6870	D	6890	D	6880	D	6760	D	6810	D	6780	D	6630	D	6680	D	6730	D		
210EBGP0071	Baldwin on-ramp	Santa Anita off-ramp	7280	D	7210	D	7230	D	7330	D	7070	D	7300	D	7070	D	6920	D	6990	D	6970	D		
210EBGP0072	Santa Anita off-ramp	Santa Anita on-ramp	6840	D	6770	D	6780	D	6900	D	6620	D	6870	D	6630	D	6440	D	6500	D	6510	D		
210EBGP0073	Santa Anita on-ramp	Huntington off-ramp	7220	D	7090	D	7080	D	7180	D	7100	D	7180	D	7020	D	6980	D	6910	D	6970	D		
210EBGP0074	Huntington off-ramp	WB Huntington on-ramp	6730	D	6590	D	6580	D	6690	D	6600	D	6670	D	6520	D	6390	D	6320	C	6410	D		
210EBGP0075	WB Huntington on-ramp	EB Huntington on-ramp	6810	D	6690	D	6670	D	6790	D	6690	D	6770	D	6620	D	6510	D	6440	D	6530	D		
210EBGP0076	EB Huntington on-ramp	Myrtle off-ramp	7210	E	7060	E	7050	E	7160	E	7080	E	7150	E	7000	E	6890	E	6820	E	6910	E		
210EBGP0077	Myrtle off-ramp	Myrtle on-ramp	6140	C	5990	C	5980	C	6090	C	6010	C	6080	C	5920	C	5790	C	5720	C	5830	C		
210EBGP0078	Myrtle on-ramp	Mountain off-ramp	6550	C	6400	C	6400	C	6500	C	6430	C	6490	C	6350	C	6240	C	6170	C	6260	C		
210EBGP0079	Mountain off-ramp	Buena Vista off-ramp	6220	D	6070	D	6070	D	6170	D	6100	D	6160	D	6020	D	5900	C	5840	C	5930	C		
210EBGP0080	Buena Vista off-ramp	Mountain on-ramp	5980	C	5840	C	5840	C	5940	C	5880	C	5930	C	5800	C	5700	C	5630	C	5720	C		
210EBGP0081	Mountain on-ramp	Buena Vista on-ramp	6580	C	6590	C	6520	C	6520	C	6530	C	6430	C	6590	C	6180	C	6190	C	6350	C		
210EBGP0082	Buena Vista on-ramp	I-605 off-ramp	6960	F	6970	F	6910	F	6910	F	6930	F	6820	F	6980	F	6590	F	6590	F	6750	F		
210EBGP0083	I-605 off-ramp	Mount Olive off-ramp	4070	B	4140	C	4090	C	4040	C	4190	C	4080	B	4250	B	4000	B	3990	B	4130	B		
210EBGP0084	Mount Olive off-ramp	Mount Olive on-ramp	3870	B	3910	B	3820	B	3710	B	3760	B	3940	B	4150	B	3850	B	3890	B	4030	B		
210EBGP0085	Mount Olive on-ramp	I-605 on-ramp	3990	B	4050	B	4000	B	3960	B	4090	B	3990	B	4210	B	3940	B	3950	B	4090	B		
210EBGP0086	I-605 on-ramp	East of I-605 on-ramp	5920	C	6010	C	5970	C	5910	C	6060	C	5940	C	6180	C	5960	C	5940	C	6090	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-105

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Eastbound I-210 (SR 134 to I-605)
 SR 710 North Study, Los Angeles County, California

Eastbound Interstate 210 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210EBGP0053	West of EB I-210 on-ramp	EB I-210 on-ramp	5960	C	5950	C	5940	C	5960	C	6140	C	6130	C	6130	C	6440	C	6440	C	6400	C		
210EBGP0054	EB I-210 on-ramp	Marengo on-ramp	13,120	E	13,100	E	13,090	E	13,100	E	13,190	E	13,240	E	13,320	E	13,340	F	13,320	E	13,230	E		
210EBGP0055	Marengo on-ramp	Lake off-ramp	14,310	F	14,290	F	14,290	F	14,300	F	14,420	F	14,470	F	14,530	F	14,590	F	14,580	F	14,500	F		
210EBGP0056	Lake off-ramp	Lake on-ramp	12,180	F	12,150	F	12,180	F	12,170	F	12,120	F	12,130	F	12,210	F	12,120	F	12,100	F	12,050	F		
210EBGP0057	Lake on-ramp	Hill off-ramp	13,610	F	13,550	F	13,550	F	13,600	F	13,590	F	13,550	F	13,520	F	13,520	F	13,520	F	13,550	F		
210EBGP0058	Hill off-ramp	Hill on-ramp	12,230	F	12,200	F	12,160	F	12,220	F	12,170	F	12,130	F	12,090	F	12,070	F	12,060	F	12,090	F		
210EBGP0059	Hill on-ramp	Allen on-ramp	12,860	F	12,830	F	12,800	F	12,850	F	12,830	F	12,780	F	12,740	F	12,730	F	12,730	F	12,770	F		
210EBGP0060	Allen on-ramp	Sierra Madre/Altadena off-ramp	13,410	F	13,380	F	13,340	F	13,400	F	13,370	F	13,330	F	13,290	F	13,290	F	13,270	F	13,310	F		
210EBGP0061	Sierra Madre/Altadena off-ramp	San Gabriel off-ramp	12,180	F	12,140	F	12,110	F	12,180	F	12,140	F	12,080	F	12,060	F	11,960	F	11,970	F	12,010	F		
210EBGP0062	San Gabriel off-ramp	San Gabriel on-ramp	11,580	F	11,550	F	11,510	F	11,570	F	11,520	F	11,490	F	11,450	F	11,290	F	11,280	F	11,330	F		
210EBGP0063	San Gabriel on-ramp	Madre off-ramp	12,350	F	12,290	F	12,330	F	12,310	F	12,230	F	12,200	F	12,240	F	12,000	F	11,980	F	12,050	F		
210EBGP0064	Madre off-ramp	SB Rosemead off-ramp	11,350	F	11,320	F	11,350	F	11,310	F	11,270	F	11,260	F	11,290	F	11,160	F	11,130	F	11,190	F		
210EBGP0065	SB Rosemead off-ramp	Madre on-ramp	10,800	E	10,750	E	10,780	E	10,760	E	10,720	E	10,700	E	10,720	E	10,640	E	10,600	E	10,670	E		
210EBGP0066	Madre on-ramp	NB Rosemead/Michillinda off-ramp	11,340	F	11,300	F	11,320	F	11,300	F	11,250	F	11,230	F	11,250	F	11,190	F	11,140	F	11,210	F		
210EBGP0067	NB Rosemead/Michillinda off-ramp	Rosemead on-ramp	10,470	F	10,430	F	10,490	F	10,450	F	10,420	F	10,400	F	10,410	F	10,380	F	10,330	F	10,390	F		
210EBGP0068	Rosemead on-ramp	Michillinda on-ramp	10,770	F	10,730	F	10,780	F	10,740	F	10,720	F	10,700	F	10,720	F	10,680	F	10,630	F	10,690	F		
210EBGP0069	Michillinda on-ramp	Baldwin off-ramp	11,200	F	11,160	F	11,200	F	11,170	F	11,130	F	11,110	F	11,140	F	11,080	F	11,030	F	11,090	F		
210EBGP0070	Baldwin off-ramp	Baldwin on-ramp	9900	F	9850	F	9900	F	9860	F	9830	F	9810	F	9840	F	9770	F	9720	F	9790	F		
210EBGP0071	Baldwin on-ramp	Santa Anita off-ramp	10,550	F	10,520	F	10,570	F	10,530	F	10,490	F	10,480	F	10,510	F	10,470	F	10,430	F	10,470	F		
210EBGP0072	Santa Anita off-ramp	Santa Anita on-ramp	9600	F	9530	F	9570	F	9540	F	9470	F	9470	F	9510	F	9410	F	9370	F	9410	F		
210EBGP0073	Santa Anita on-ramp	Huntington off-ramp	10,260	F	10,250	F	10,230	F	10,180	F	10,140	F	10,110	F	10,170	F	10,040	F	10,070	F	10,040	F		
210EBGP0074	Huntington off-ramp	WB Huntington on-ramp	9550	F	9550	F	9530	F	9480	F	9440	F	9420	F	9470	F	9340	F	9370	F	9350	F		
210EBGP0075	WB Huntington on-ramp	EB Huntington on-ramp	9680	F	9690	F	9680	F	9620	F	9580	F	9570	F	9610	F	9500	F	9530	F	9500	F		
210EBGP0076	EB Huntington on-ramp	Myrtle off-ramp	10,320	F	10,330	F	10,310	F	10,250	F	10,220	F	10,190	F	10,240	F	10,130	F	10,160	F	10,130	F		
210EBGP0077	Myrtle off-ramp	Myrtle on-ramp	8610	E	8610	E	8610	E	8550	E	8520	E	8490	E	8530	E	8420	E	8450	E	8430	E		
210EBGP0078	Myrtle on-ramp	Mountain off-ramp	9440	E	9440	E	9430	E	9370	E	9340	E	9310	E	9360	E	9250	E	9280	E	9260	E		
210EBGP0079	Mountain off-ramp	Buena Vista off-ramp	8770	F	8780	F	8770	F	8720	F	8700	F	8680	F	8710	F	8640	F	8690	F	8650	F		
210EBGP0080	Buena Vista off-ramp	Mountain on-ramp	8480	E	8480	E	8470	E	8410	E	8360	E	8330	E	8380	E	8240	E	8280	E	8250	E		
210EBGP0081	Mountain on-ramp	Buena Vista on-ramp	9500	D	9470	D	9500	D	9470	D	9390	D	9420	D	9370	D	9290	D	9240	D	9300	D		
210EBGP0082	Buena Vista on-ramp	I-605 off-ramp	10,130	F	10,100	F	10,130	F	10,100	F	10,030	F	10,060	F	10,010	F	9940	F	9890	F	9950	F		
210EBGP0083	I-605 off-ramp	Mount Olive off-ramp	7030	D	7030	D	7060	D	7010	D	7010	D	7030	D	7000	D	7040	D	6980	D	7010	D		
210EBGP0084	Mount Olive off-ramp	Mount Olive on-ramp	6730	D	6710	D	6570	D	6700	D	6590	D	6630	D	6720	D	6580	D	6590	D	6720	D		
210EBGP0085	Mount Olive on-ramp	I-605 on-ramp	6930	D	6920	D	6960	D	6910	D	6910	D	6920	D	6890	D	6930	D	6870	D	6900	D		
210EBGP0086	I-605 on-ramp	East of I-605 on-ramp	10,000	E	9970	E	10,050	E	10,030	E	10,000	E	10,000	E	9950	E	10,010	E	9970	E	10,010	E		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-106

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Westbound I-210 (SR 134 to I-605)

SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0001	East of I-605 off-ramp	I-605 off-ramp	11,120	F	11,180	F	11,170	F	11,230	F	11,200	F	11,110	F	11,170	F	11,190	F	11,100	F	11,250	F		
210WBG0002	I-605 off-ramp	Mount Olive off-ramp	7380	D	7440	D	7420	D	7490	D	7420	D	7360	D	7370	D	7380	D	7280	D	7450	D		
210WBG0003	Mount Olive off-ramp	Mount Olive on-ramp	7210	D	7270	D	7250	D	7330	D	7250	D	7190	D	7200	D	7210	D	7110	D	7270	D		
210WBG0004	Mount Olive on-ramp	I-605 on-ramp	7560	D	7630	D	7640	D	7750	D	7620	D	7550	D	7550	D	7560	D	7470	D	7630	D		
210WBG0005	I-605 on-ramp	Buena Vista off-ramp	9830	E	9880	E	9870	E	10,030	E	9760	E	9720	E	9690	E	9580	E	9500	E	9670	E		
210WBG0006	Buena Vista off-ramp	Mountain off-ramp	9300	D	9330	D	9320	D	9490	D	9200	D	9150	D	9130	D	9010	D	8940	D	9100	D		
210WBG0007	Mountain off-ramp	Buena Vista on-ramp	8330	E	8360	E	8350	E	8530	E	8230	E	8180	E	8160	E	8060	E	7980	E	8160	E		
210WBG0008	Buena Vista on-ramp	Mountain on-ramp	8810	F	8770	F	8780	F	8950	F	8720	F	8720	F	8640	F	8530	F	8510	F	8580	F		
210WBG0009	Mountain on-ramp	Myrtle off-ramp	9320	E	9270	E	9290	E	9460	E	9240	E	9230	E	9150	E	9050	E	9020	E	9100	E		
210WBG0010	Myrtle off-ramp	Myrtle on-ramp	8490	E	8450	E	8460	E	8620	E	8410	E	8410	E	8310	E	8240	E	8210	E	8280	E		
210WBG0011	Myrtle on-ramp	Huntington off-ramp	9040	F	9010	F	9010	F	9160	F	8970	F	8960	F	8870	F	8800	F	8770	F	8840	F		
210WBG0012	Huntington off-ramp	Huntington on-ramp	8370	E	8350	E	8330	E	8500	E	8230	E	8150	E	8230	E	8070	E	8060	E	8160	E		
210WBG0013	Huntington on-ramp	Santa Anita off-ramp	9070	F	9050	F	9020	F	9160	F	8930	F	8850	F	8930	F	8830	F	8820	F	8900	F		
210WBG0014	Santa Anita off-ramp	NB Santa Anita off-ramp	8390	E	8360	E	8340	E	8490	E	8240	E	8160	E	8240	E	8110	E	8100	E	8170	E		
210WBG0015	NB Santa Anita on-ramp	SB Santa Anita on-ramp	8970	F	8940	F	8920	F	9070	F	8830	F	8750	F	8830	F	8720	F	8740	F	8810	F		
210WBG0016	SB Santa Anita on-ramp	Baldwin off-ramp	9550	F	9500	F	9480	F	9610	F	9430	F	9360	F	9470	F	9380	F	9370	F	9480	F		
210WBG0017	Baldwin off-ramp	NB Baldwin on-ramp	8890	F	8850	F	8830	E	8930	F	8780	E	8720	E	8830	E	8730	E	8720	E	8830	E		
210WBG0018	NB Baldwin on-ramp	SB Baldwin on-ramp	9130	F	9040	F	9120	F	9160	F	9060	F	9070	F	9050	F	9010	F	8970	F	9110	F		
210WBG0019	SB Baldwin on-ramp	Rosemead/Michillinda off-ramp	9390	F	9310	F	9380	F	9410	F	9370	F	9350	F	9330	F	9330	F	9310	F	9390	F		
210WBG0020	Rosemead/Michillinda off-ramp	NB Michillinda on-ramp	9070	F	8980	F	9060	F	9120	F	9040	F	8990	F	8980	F	8980	F	8980	F	9040	F		
210WBG0021	NB Michillinda on-ramp	NB Rosemead on-ramp	9610	F	9530	F	9610	F	9660	F	9550	F	9510	F	9550	F	9490	F	9530	F	9580	F		
210WBG0022	NB Rosemead on-ramp	SB Rosemead on-ramp	10,050	E	9950	E	10,060	E	10,110	E	9920	E	9950	E	9920	E	9910	E	9920	E	10,010	E		
210WBG0023	SB Rosemead on-ramp	Sierra Madre Villa off-ramp	10,550	F	10,460	F	10,560	F	10,590	F	10,410	F	10,430	F	10,400	F	10,420	F	10,430	F	10,500	F		
210WBG0024	Sierra Madre Villa off-ramp	Sierra Madre Villa on-ramp	10,140	E	10,040	E	10,150	E	10,180	E	10,000	E	10,020	E	9990	E	10,010	E	10,020	E	10,080	E		
210WBG0025	Sierra Madre Villa on-ramp	Sierra Madre off-ramp	10,470	F	10,380	F	10,490	F	10,510	F	10,370	F	10,360	E	10,290	E	10,310	E	10,310	E	10,390	F		
210WBG0026	Sierra Madre off-ramp	Sierra Madre on-ramp	9920	E	9840	E	9940	E	9980	E	9820	E	9810	E	9740	E	9770	E	9770	E	9840	E		
210WBG0027	Sierra Madre on-ramp	Altadena on-ramp	10,340	E	10,280	E	10,320	E	10,510	E	10,160	E	10,160	E	10,100	E	10,150	E	10,070	E	10,240	E		
210WBG0028	Altadena on-ramp	Allen off-ramp	11,040	F	10,970	F	11,020	F	11,180	F	10,950	F	10,950	F	10,880	F	10,990	F	10,910	F	11,080	F		
210WBG0029	Allen off-ramp	Hill off-ramp	10,370	E	10,300	E	10,370	E	10,490	F	10,300	E	10,300	E	10,220	E	10,350	E	10,250	E	10,420	F		
210WBG0030	Hill off-ramp	Hill on-ramp	10,050	E	9990	E	10,050	E	10,200	E	9970	E	9980	E	9900	E	10,010	E	9940	E	10,110	E		
210WBG0031	Hill on-ramp	Lake off-ramp	10,870	F	10,950	F	10,920	F	11,000	F	10,980	F	10,900	F	10,860	F	10,950	F	11,020	F	10,960	F		
210WBG0032	Lake off-ramp	Lake on-ramp	9710	D	9810	E	9780	E	9910	E	9850	E	9770	E	9740	E	9820	E	9900	E	9830	E		
210WBG0033	Lake on-ramp	Marengo off-ramp	10,750	F	10,850	F	10,800	F	10,930	F	11,190	F	11,060	F	11,030	F	11,150	F	11,210	F	11,140	F		
210WBG0034	Marengo off-ramp	WB I-210/ Fair Oaks off-ramp	9940	D	9980	D	9960	D	10,030	D	10,250	D	10,190	D	10,180	D	10,330	D	10,320	D	10,350	D		
210WBG0035	WB I-210/ Fair Oaks off-ramp	West of WB I-210/Fair Oaks off-ramp	6500	C	6510	C	6510	C	6550	C	6500	C	5990	C	5990	C	6370	C	6340	C	6340	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-107

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Westbound I-210 (SR 134 to I-605)
 SR 710 North Study, Los Angeles County, California

Westbound Interstate 210 - PM Peak Hour Analysis

Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
210WBG0001	East of I-605 off-ramp	I-605 off-ramp	8300	D	8330	D	8320	D	8290	D	8280	D	8310	D	8330	D	8280	D	8330	D	8340	D	8340	D
210WBG0002	I-605 off-ramp	Mount Olive off-ramp	5580	C	5600	C	5600	C	5580	C	5540	C	5590	C	5590	C	5480	C	5530	C	5570	C	5570	C
210WBG0003	Mount Olive off-ramp	Mount Olive on-ramp	5450	C	5460	C	5470	C	5450	C	5410	C	5450	C	5450	C	5350	C	5400	C	5440	C	5440	C
210WBG0004	Mount Olive on-ramp	I-605 on-ramp	5710	C	5720	C	5720	C	5710	C	5660	C	5700	C	5710	C	5650	C	5690	C	5710	C	5710	C
210WBG0005	I-605 on-ramp	Buena Vista off-ramp	7660	D	7620	D	7640	D	7630	D	7520	D	7580	D	7570	D	7260	D	7280	D	7410	D	7410	D
210WBG0006	Buena Vista off-ramp	Mountain off-ramp	7240	C	7200	C	7210	C	7220	C	7090	C	7160	C	7140	C	6820	C	6830	C	6970	C	6970	C
210WBG0007	Mountain off-ramp	Buena Vista on-ramp	6580	D	6540	D	6540	D	6570	D	6430	D	6500	D	6480	D	6140	C	6160	C	6310	C	6310	C
210WBG0008	Buena Vista on-ramp	Mountain on-ramp	6870	D	6830	D	6840	D	6890	D	6740	D	6790	D	6750	D	6520	D	6470	D	6620	D	6620	D
210WBG0009	Mountain on-ramp	Myrtle off-ramp	7210	C	7170	C	7180	C	7230	C	7080	C	7130	C	7090	C	6850	C	6810	C	6950	C	6950	C
210WBG0010	Myrtle off-ramp	Myrtle on-ramp	6660	D	6620	D	6620	D	6670	D	6530	D	6580	D	6540	D	6300	C	6250	C	6390	C	6390	C
210WBG0011	Myrtle on-ramp	Huntington off-ramp	7170	D	7130	D	7140	D	7180	D	7030	D	7080	D	7040	D	6790	D	6740	D	6890	D	6890	D
210WBG0012	Huntington off-ramp	Huntington on-ramp	6680	D	6670	D	6710	D	6740	D	6610	D	6670	D	6640	D	6290	C	6320	C	6410	C	6410	C
210WBG0013	Huntington on-ramp	Santa Anita off-ramp	7190	E	7170	E	7210	E	7230	E	7100	E	7160	E	7140	E	6850	D	6870	D	6950	D	6950	D
210WBG0014	Santa Anita off-ramp	NB Santa Anita off-ramp	6550	D	6530	D	6570	D	6590	D	6470	D	6520	D	6500	D	6250	C	6260	C	6330	C	6330	C
210WBG0015	NB Santa Anita on-ramp	SB Santa Anita on-ramp	6850	D	6830	D	6870	D	6890	D	6770	D	6810	D	6800	D	6560	D	6570	D	6640	D	6640	D
210WBG0016	SB Santa Anita on-ramp	Baldwin off-ramp	7120	D	7110	D	7150	D	7160	D	7060	D	7090	D	7080	D	6920	D	6940	D	6970	D	6970	D
210WBG0017	Baldwin off-ramp	NB Baldwin on-ramp	6680	D	6660	D	6700	D	6730	D	6590	D	6620	D	6610	D	6370	C	6410	C	6460	D	6460	D
210WBG0018	NB Baldwin on-ramp	SB Baldwin on-ramp	7080	D	6980	D	7040	D	7050	D	6970	D	6950	D	6920	D	6750	D	6730	D	6810	D	6810	D
210WBG0019	SB Baldwin on-ramp	Rosemead/Michillinda off-ramp	7270	D	7170	D	7230	D	7240	D	7180	D	7130	D	7130	D	6970	D	6950	D	7030	D	7030	D
210WBG0020	Rosemead/Michillinda off-ramp	NB Michillinda on-ramp	6910	D	6800	D	6860	D	6870	D	6830	D	6770	D	6780	D	6620	D	6600	D	6680	D	6680	D
210WBG0021	NB Michillinda on-ramp	NB Rosemead on-ramp	7190	D	7100	D	7140	D	7170	D	7120	D	7060	D	7080	D	6900	D	6860	D	6960	D	6960	D
210WBG0022	NB Rosemead on-ramp	SB Rosemead on-ramp	7700	C	7610	C	7660	C	7680	C	7590	C	7560	C	7550	C	7310	C	7280	C	7400	C	7400	C
210WBG0023	SB Rosemead on-ramp	Sierra Madre Villa off-ramp	8380	D	8300	D	8340	D	8360	D	8280	D	8240	D	8220	D	7960	D	7910	D	8050	D	8050	D
210WBG0024	Sierra Madre Villa off-ramp	Sierra Madre Villa on-ramp	8010	C	7930	C	7970	C	7990	C	7900	C	7870	C	7850	C	7580	C	7530	C	7670	C	7670	C
210WBG0025	Sierra Madre Villa on-ramp	Sierra Madre off-ramp	8670	D	8570	D	8620	D	8660	D	8560	D	8520	D	8490	D	8130	D	8080	D	8230	D	8230	D
210WBG0026	Sierra Madre off-ramp	Sierra Madre on-ramp	8110	D	8010	C	8060	D	8100	D	7990	C	7960	C	7930	C	7560	C	7510	C	7670	C	7670	C
210WBG0027	Sierra Madre on-ramp	Altadena on-ramp	8620	D	8580	D	8490	D	8640	D	8460	D	8470	D	8480	D	8090	D	8020	C	8160	D	8160	D
210WBG0028	Altadena on-ramp	Allen off-ramp	9250	E	9220	E	9130	E	9270	E	9200	E	9180	E	9190	E	8910	D	8830	D	8970	E	8970	E
210WBG0029	Allen off-ramp	Hill off-ramp	8730	D	8700	D	8610	D	8750	D	8680	D	8660	D	8670	D	8380	D	8300	D	8440	D	8440	D
210WBG0030	Hill off-ramp	Hill on-ramp	8260	D	8220	D	8140	D	8280	D	8220	D	8200	D	8220	D	7910	C	7840	C	7980	C	7980	C
210WBG0031	Hill on-ramp	Lake off-ramp	9150	E	9160	E	9150	E	9160	E	9280	E	9190	E	9200	E	9020	E	8890	E	9010	E	9010	E
210WBG0032	Lake off-ramp	Lake on-ramp	8160	D	8190	D	8170	D	8180	D	8280	D	8190	D	8200	D	8020	C	7880	C	8020	C	8020	C
210WBG0033	Lake on-ramp	Marengo off-ramp	9410	E	9430	E	9420	E	9440	E	9740	E	9560	E	9560	E	9450	E	9310	E	9460	E	9460	E
210WBG0034	Marengo off-ramp	WB I-210/ Fair Oaks off-ramp	8940	C	8930	C	8940	C	8980	C	9350	C	9200	C	9210	C	8920	C	8870	C	9070	C	9070	C
210WBG0035	WB I-210/ Fair Oaks off-ramp	West of WB I-210/Fair Oaks off-ramp	6050	C	6030	C	6050	C	6090	E	6500	C	6530	C	6570	E	6280	C	6210	C	6350	C	6350	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-108

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Northbound I-605
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 605 - AM Peak Hour Analysis																												
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative																	
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)							
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
605NBGP0001	South of SR 60 off-ramp	SR 60 off-ramp	7360	C	7320	C	7290	C	7350	C	7330	C	7320	C	7370	C	7310	C	7330	C	7300	C	7300	C	7300	C	7300	C
605NBGP0002	SR 60 off-ramp	EB SR 60 on-ramp	4420	C	4400	C	4410	C	4440	C	4440	C	4420	C	4460	C	4430	C	4420	C	4410	C	4410	C	4410	C	4410	C
605NBGP0003	EB SR 60 on-ramp	WB SR 60 on-ramp	5830	C	5820	C	5810	C	5880	C	5840	C	5800	C	5850	C	5810	C	5800	C	5800	C	5800	C	5800	C	5800	C
605NBGP0004	WB SR 60 on-ramp	Valley off-ramp	6670	D	6640	D	6620	D	6600	D	6600	D	6570	D	6610	D	6560	D	6560	D	6550	D	6550	D	6550	D	6550	D
605NBGP0005	Valley off-ramp	EB Valley on-ramp	5840	C	5810	C	5810	C	5800	C	5830	C	5790	C	5820	C	5790	C	5830	C	5770	C	5770	C	5770	C	5770	C
605NBGP0006	EB Valley on-ramp	WB Valley on-ramp	5930	C	5890	C	5890	C	5870	C	5890	C	5860	C	5890	C	5860	C	5910	C	5830	C	5830	C	5830	C	5830	C
605NBGP0007	WB Valley on-ramp	I-10 off-ramp	6680	F	6650	F	6650	F	6600	F	6680	F	6660	F	6670	F	6620	F	6650	F	6620	F	6620	F	6620	F	6620	F
605NBGP0008	I-10 off-ramp	I-10 on-ramp	3100	B	3090	B	3120	B	3220	B	3120	B	3100	B	3130	B	3020	B	3060	B	3000	B	3000	B	3000	B	3000	B
605NBGP0009	I-10 on-ramp	Ramona off-ramp	5700	F	5680	F	5690	F	5780	F	5610	F	5600	F	5620	F	5510	F	5500	F	5530	F	5530	F	5530	F	5530	F
605NBGP0010	Ramona off-ramp	Ramona on-ramp	4990	C	4980	C	4990	C	5080	C	4890	C	4900	C	4910	C	4800	C	4790	C	4810	C	4810	C	4810	C	4810	C
605NBGP0011	Ramona on-ramp	Lower Azusa/Los Angeles off-ramp	5510	D	5510	D	5520	D	5590	D	5420	D	5430	D	5430	D	5330	D	5320	D	5340	D	5340	D	5340	D	5340	D
605NBGP0012	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	4660	C	4670	C	4680	C	4710	C	4560	C	4570	C	4590	C	4500	B	4470	B	4500	B	4500	B	4500	B	4500	B
605NBGP0013	Lower Azusa/Los Angeles on-ramp	Live Oak off-ramp	4940	C	4940	C	4960	C	4990	C	4830	C	4840	C	4870	C	4770	C	4740	C	4770	C	4770	C	4770	C	4770	C
605NBGP0014	Live Oak off-ramp	EB Arrow on-ramp	4210	B	4210	B	4220	B	4230	B	4110	B	4120	B	4120	B	4020	B	4010	B	4040	B	4040	B	4040	B	4040	B
605NBGP0015	EB Arrow on-ramp	WB Arrow on-ramp	4390	B	4380	B	4390	B	4410	B	4290	B	4300	B	4290	B	4200	B	4180	B	4220	B	4220	B	4220	B	4220	B
605NBGP0016	WB Arrow on-ramp	EB I-210 off-ramp	4560	B	4560	B	4550	B	4580	C	4470	B	4470	B	4470	B	4390	B	4370	B	4390	B	4390	B	4390	B	4390	B
605NBGP0017	EB I-210 off-ramp	Huntington off-ramp	2640	B	2600	B	2590	B	2640	B	2500	B	2520	B	2500	B	2370	B	2380	B	2400	B	2400	B	2400	B	2400	B
605NBGP0018	Huntington off-ramp	North of Huntington off-ramp	2100	B	2070	B	2060	B	2110	B	1960	B	1990	B	1970	B	1840	B	1850	B	1860	B	1860	B	1860	B	1860	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-109

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Northbound I-605
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 605 - PM Peak Hour Analysis																												
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative																	
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)							
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605NBGP0001	South of SR 60 off-ramp	SR 60 off-ramp	9870	D	9880	D	9870	D	9920	D	9870	D	9860	D	9870	D	9860	D	9860	D	9850	D	9850	D	9850	D	9850	D
605NBGP0002	SR 60 off-ramp	EB SR 60 on-ramp	6900	F	6910	F	6900	F	6890	F	6880	F	6870	F	6890	F	6880	F	6870	F	6860	F	6860	F	6860	F	6860	F
605NBGP0003	EB SR 60 on-ramp	WB SR 60 on-ramp	8430	E	8420	E	8420	E	8450	E	8430	E	8420	E	8440	E	8420	E	8430	E	8410	E	8410	E	8410	E	8410	E
605NBGP0004	WB SR 60 on-ramp	Valley off-ramp	9280	F	9230	F	9250	F	9260	F	9210	F	9210	F	9220	F	9200	F	9200	F	9180	F	9180	F	9180	F	9180	F
605NBGP0005	Valley off-ramp	EB Valley on-ramp	8180	E	8170	E	8170	E	8190	E	8170	E	8160	E	8190	E	8200	E	8180	E	8180	E	8180	E	8180	E	8180	E
605NBGP0006	EB Valley on-ramp	WB Valley on-ramp	8260	E	8250	E	8240	E	8270	E	8250	E	8250	E	8270	E	8260	E	8240	E	8260	E	8260	E	8260	E	8260	E
605NBGP0007	WB Valley on-ramp	I-10 off-ramp	9030	F	9020	F	9010	F	9000	F	9000	F	9010	F	9020	F	8990	F	8980	F	8990	F	8990	F	8990	F	8990	F
605NBGP0008	I-10 off-ramp	I-10 on-ramp	5250	D	5270	D	5250	D	5280	D	5210	D	5270	D	5250	D	5080	D	5050	D	5150	D	5150	D	5150	D	5150	D
605NBGP0009	I-10 on-ramp	Ramona off-ramp	7520	D	7500	F	7530	D	7600	D	7500	D	7510	D	7460	D	7310	C	7300	D	7390	D	7390	D	7390	D	7390	D
605NBGP0010	Ramona off-ramp	Ramona on-ramp	6690	D	6660	D	6690	D	6760	D	6660	D	6670	D	6620	D	6470	D	6470	D	6550	D	6550	D	6550	D	6550	D
605NBGP0011	Ramona on-ramp	Lower Azusa/Los Angeles off-ramp	7120	E	7090	E	7120	E	7190	E	7100	E	7100	E	7060	E	6870	D	6850	D	6960	E	6960	E	6960	E	6960	E
605NBGP0012	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	6140	C	6100	C	6130	C	6200	C	6100	C	6110	C	6070	C	5890	C	5870	C	5970	C	5970	C	5970	C	5970	C
605NBGP0013	Lower Azusa/Los Angeles on-ramp	Live Oak off-ramp	6380	D	6330	D	6370	D	6430	D	6340	D	6330	D	6300	D	6120	D	6100	D	6200	D	6200	D	6200	D	6200	D
605NBGP0014	Live Oak off-ramp	EB Arrow on-ramp	5430	C	5380	C	5420	C	5480	C	5390	C	5380	C	5350	C	5150	C	5130	C	5240	C	5240	C	5240	C	5240	C
605NBGP0015	EB Arrow on-ramp	WB Arrow on-ramp	5550	C	5510	C	5550	C	5600	C	5520	C	5510	C	5480	C	5280	C	5260	C	5370	C	5370	C	5370	C	5370	C
605NBGP0016	WB Arrow on-ramp	EB I-210 off-ramp	5660	C	5620	C	5660	C	5720	C	5640	C	5630	C	5600	C	5410	C	5380	C	5510	C	5510	C	5510	C	5510	C
605NBGP0017	EB I-210 off-ramp	Huntington off-ramp	2600	B	2570	B	2570	B	2600	B	2550	B	2560	B	2550	B	2330	B	2280	B	2400	B	2400	B	2400	B	2400	B
605NBGP0018	Huntington off-ramp	North of Huntington off-ramp	1950	B	1910	B	1930	B	1940	B	1870	B	1890	B	1870	B	1630	B	1600	B	1710	B	1710	B	1710	B	1710	B

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-110

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Southbound I-605
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 605 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605SBGP0001	North of Huntington on-ramp	Huntington on-ramp	3650	D	3650	D	3660	D	3640	D	3690	D	3660	D	3710	D	3720	D	3740	D	3710	D	3710	D
605SBGP0002	Huntington on-ramp	EB I-210 on-ramp	3890	C	3890	C	3890	C	3810	C	3910	C	3890	C	3920	C	3960	C	3970	C	3940	C	3940	C
605SBGP0003	EB I-210 on-ramp	Arrow off-ramp	6780	D	6720	D	6710	D	6680	D	6650	D	6620	D	6660	D	6540	D	6560	D	6570	D	6570	D
605SBGP0004	Arrow off-ramp	Live Oak on-ramp	6180	C	6130	C	6130	C	6090	C	6060	C	6040	C	6070	C	5960	C	5980	C	5980	C	5980	C
605SBGP0005	Live Oak on-ramp	Lower Azusa/Los Angeles off-ramp	7690	E	7640	E	7630	E	7600	E	7560	E	7570	E	7580	E	7460	E	7490	F	7500	E	7500	E
605SBGP0006	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	7070	D	7020	D	7020	D	6990	D	6950	D	6950	D	6960	D	6850	D	6880	D	6880	D	6880	D
605SBGP0007	Lower Azusa/Los Angeles on-ramp	Ramona off-ramp	8540	F	8500	F	8490	F	8480	F	8420	F	8430	F	8440	F	8330	F	8330	F	8350	F	8350	F
605SBGP0008	Ramona off-ramp	Ramona on-ramp	7950	E	7900	E	7900	E	7860	E	7820	E	7830	E	7840	E	7730	E	7740	E	7760	E	7760	E
605SBGP0009	Ramona on-ramp	I-10 off-ramp	9250	F	9210	F	9200	F	9180	F	9130	F	9140	F	9150	F	9040	F	9040	F	9070	F	9070	F
605SBGP0010	I-10 off-ramp	I-10 on-ramp	5380	C	5360	C	5380	C	5540	C	5360	C	5380	C	5360	C	5270	C	5310	C	5300	C	5300	C
605SBGP0011	I-10 on-ramp	Valley off-ramp	8660	F	8670	F	8670	F	8860	F	8680	F	8700	F	8690	F	8630	F	8620	F	8660	F	8660	F
605SBGP0012	Valley off-ramp	Valley on-ramp	7890	E	7900	E	7910	E	8110	E	7910	E	7930	E	7920	E	7870	E	7860	E	7890	E	7890	E
605SBGP0013	Valley on-ramp	SR 60 off-ramp	9140	F	9150	F	9160	F	9340	F	9160	F	9180	F	9170	F	9110	F	9110	F	9140	F	9140	F
605SBGP0014	SR 60 off-ramp	WB SR 60 on-ramp	6270	E	6260	E	6270	E	6300	E	6260	E	6240	E	6260	E	6250	E	6230	E	6230	E	6230	E
605SBGP0015	WB SR 60 on-ramp	EB SR 60 on-ramp	8750	F	8720	F	8740	F	8810	F	8750	F	8730	F	8760	F	8750	F	8720	F	8730	F	8730	F
605SBGP0016	EB SR 60 on-ramp	South of EB SR 60 on-ramp	9750	D	9750	D	9780	D	9860	D	9780	D	9780	D	9780	D	9750	D	9750	D	9760	D	9760	D

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-111

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Southbound I-605
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 605 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
605SBGP0001	North of Huntington on-ramp	Huntington on-ramp	2580	C	2590	C	2590	C	2570	C	2590	C	2590	C	2610	C	2650	C	2650	C	2630	C	2630	C
605SBGP0002	Huntington on-ramp	EB I-210 on-ramp	2700	B	2710	B	2710	B	2690	B	2720	B	2710	B	2720	B	2770	B	2770	B	2760	B	2760	B
605SBGP0003	EB I-210 on-ramp	Arrow off-ramp	5810	D	5780	D	5780	D	5780	D	5740	D	5740	D	5740	D	5670	D	5680	D	5700	D	5700	D
605SBGP0004	Arrow off-ramp	Live Oak on-ramp	4910	C	4880	C	4880	C	4880	C	4850	C	4850	C	4840	C	4770	C	4770	C	4790	C	4790	C
605SBGP0005	Live Oak on-ramp	Lower Azusa/Los Angeles off-ramp	6380	D	6350	D	6350	D	6350	D	6310	D	6320	D	6310	D	6240	D	6250	D	6260	D	6260	D
605SBGP0006	Lower Azusa/Los Angeles off-ramp	Lower Azusa/Los Angeles on-ramp	5660	C	5630	C	5630	C	5620	C	5590	C	5590	C	5580	C	5510	C	5520	C	5540	C	5540	C
605SBGP0007	Lower Azusa/Los Angeles on-ramp	Ramona off-ramp	6830	D	6800	D	6790	D	6790	D	6750	D	6760	D	6750	D	6680	D	6680	D	6700	D	6700	D
605SBGP0008	Ramona off-ramp	Ramona on-ramp	6110	C	6080	C	6070	C	6070	C	6020	C	6030	C	6020	C	5960	C	5960	C	5980	C	5980	C
605SBGP0009	Ramona on-ramp	I-10 off-ramp	6800	C	6770	C	6750	C	6760	C	6700	C	6710	C	6700	C	6630	C	6640	C	6650	C	6650	C
605SBGP0010	I-10 off-ramp	I-10 on-ramp	4210	B	4220	B	4200	B	4270	B	4220	B	4240	B	4220	B	4170	B	4180	B	4190	B	4190	B
605SBGP0011	I-10 on-ramp	Valley off-ramp	7680	F	7690	F	7680	F	7800	F	7680	F	7710	F	7680	F	7680	F	7700	F	7670	F	7670	F
605SBGP0012	Valley off-ramp	Valley on-ramp	6770	D	6760	D	6760	D	6870	D	6750	D	6780	D	6760	D	6760	D	6780	D	6750	D	6750	D
605SBGP0013	Valley on-ramp	SR 60 off-ramp	7520	D	7510	D	7510	D	7620	D	7500	D	7530	D	7510	D	7510	D	7530	D	7500	D	7500	D
605SBGP0014	SR 60 off-ramp	WB SR 60 on-ramp	4960	D	4970	D	4970	D	5000	D	4980	D	4980	D	4970	D	4960	D	4950	D	4960	D	4960	D
605SBGP0015	WB SR 60 on-ramp	EB SR 60 on-ramp	7460	D	7460	D	7460	D	7490	D	7480	D	7480	D	7480	D	7490	D	7480	D	7480	D	7480	D
605SBGP0016	EB SR 60 on-ramp	South of EB SR 60 on-ramp	8470	C	8480	C	8480	C	8490	C	8450	C	8460	C	8460	C	8470	C	8470	C	8480	C	8480	C

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand
 Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-112

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Northbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 710/State Route 710 - AM Peak Hour Analysis																										
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative															
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)					
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS		
710NBGP0001	South of NB I-5 off-ramp	NB I-5 off-ramp	11,420	F	11,470	F	11,470	F	11,660	F	11,560	F	11,560	F	11,540	F	11,560	F	11,600	F	11,630	F				
710NBGP0002	NB I-5 off-ramp	Olympic off-ramp	7940	F	7970	F	7960	F	8120	F	8030	F	8020	F	7990	F	7980	F	8050	F	8060	F				
710NBGP0003	Olympic off-ramp	NB I-5 on-ramp	6880	F	6900	F	6880	F	6990	F	6910	F	6930	F	6920	F	6880	F	6950	F	6920	F				
710NBGP0004	NB I-5 on-ramp	Olympic on-ramp	7990	E	8040	E	8040	E	8050	E	8170	E	8210	E	8170	E	8150	E	8250	E	8210	E				
710NBGP0005	Olympic on-ramp	SR 60 off-ramp	8360	F	8400	F	8390	F	8410	F	8500	F	8550	F	8490	F	8500	F	8610	F	8570	F				
710NBGP0006	SR 60 off-ramp	Third off-ramp	5280	C	5290	C	5300	C	5240	C	5410	C	5490	C	5450	C	5650	C	5710	C	5650	C				
710NBGP0007	Third off-ramp	Third on-ramp	5150	D	5210	D	5190	D	5100	D	5330	D	5400	D	5390	D	5570	D	5650	D	5580	D				
710NBGP0008	Third on-ramp	Cesar Chavez off-ramp	5230	D	5350	D	5280	D	5200	D	5460	D	5570	D	5520	D	5680	E	5790	E	5730	E				
710NBGP0009	Cesar Chavez off-ramp	SR 60 on-ramp	4560	C	4640	C	4600	C	4550	C	4830	D	4890	D	4850	D	5060	D	5150	D	5090	D				
710NBGP0010	SR 60 on-ramp	Cesar Chavez on-ramp	7120	D	7430	D	7370	D	7290	D	7690	D	7780	E	7700	D	7790	E	7970	E	7870	E				
710NBGP0011	Cesar Chavez on-ramp	Ramona off-ramp	7410	F	7770	F	7720	F	7600	F	8070	F	8180	F	8090	F	8170	F	8330	F	8240	F				
710NBGP0012	Ramona off-ramp	I-10 off-ramp	6830	F	7260	F	7210	F	7050	F	7460	F	7570	F	7490	F	7660	F	7840	F	7770	F				
710NBGP0013	I-10 off-ramp	EB I-10 on-ramp	2330	C	3150	C	3130	C	2480	C	3820	D	3850	D	3830	D	4830	F	4880	F	4810	F				
710NBGP0014	EB I-10 on-ramp	Busway on-ramp	2530	B	3370	B	3350	B	2680	B	4070	C	4110	C	4080	C	5850	E	5910	E	5700	D				
710NBGP0015	Busway on-ramp	WB I-10 on-ramp	2610	B	3450	C	3430	C	2760	B	4100	C	4140	C	4110	C	5890	E	5950	E	5740	D				
710NBGP0016	WB I-10 on-ramp	North of WB I-10 on-ramp	2720	B	3560	C	3540	C	2870	B																
710NBGP0015	Busway on-ramp	WB I-10 on-ramp									4100	C	4140	C	4110	C	5890	E	5950	E	5740	D				
710NBGP1002	WB I-10 on-ramp	Valley Blvd off-ramp									4180	D	4250	D	4190	D	3830	C	3950	C	3680	C				
710NBGP1003	Valley Blvd off-ramp	Del Mar off-ramp									3160	D	3180	C	3170	D	3080	C	3120	C	2870	C				
710NBGP1004	Del Mar off-ramp	WB SR 134 off-ramp									2500	C	2500	C	2510	C	1950	C	2010	C	1790	B				
710NBGP1005	WB SR 134 off-ramp	EB SR 134 off-ramp									2320	C	2300	C	2330	C	1330	A	1310	A	1240	A				
210WBG0038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp									1800	B	1760	B	1800	B	2940	C	2900	C	2820	C				
210WBG0039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp									2650	B	2610	B	2650	B	3720	C	3680	C	3620	C				
710NBGP2001	Northbound I-710 Tunnel 2	Northbound I-710 Tunnel 2														2610	C	2550	C	2510	C					

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-113

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Northbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Northbound Interstate 710/State Route 710 - PM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
710NBGP0001	South of NB I-5 off-ramp	NB I-5 off-ramp	9840	E	9900	E	9910	E	10,050	E	9940	E	9990	E	9950	E	10,020	E	10,050	E	10,020	E	10,020	E
710NBGP0002	NB I-5 off-ramp	Olympic off-ramp	7620	F	7680	F	7660	F	7800	F	7700	F	7740	F	7720	F	7720	F	7780	F	7740	F	7740	F
710NBGP0003	Olympic off-ramp	NB I-5 on-ramp	6560	F	6590	F	6570	F	6680	F	6570	F	6600	F	6580	F	6560	F	6620	F	6580	F	6580	F
710NBGP0004	NB I-5 on-ramp	Olympic on-ramp	7770	D	7830	E	7820	E	7870	E	7880	E	7970	E	7880	E	8000	E	8080	E	8010	E	8010	E
710NBGP0005	Olympic on-ramp	SR 60 off-ramp	8130	F	8200	F	8190	F	8230	F	8260	F	8350	F	8270	F	8390	F	8460	F	8400	F	8400	F
710NBGP0006	SR 60 off-ramp	Third off-ramp	4620	C	4770	C	4730	C	4680	C	4870	C	4940	C	4870	C	5010	C	5110	C	5010	C	5010	C
710NBGP0007	Third off-ramp	Third on-ramp	4490	C	4640	C	4600	C	4550	C	4730	C	4810	D	4730	C	4890	D	4980	D	4880	D	4880	D
710NBGP0008	Third on-ramp	Cesar Chavez off-ramp	4560	D	4720	D	4700	D	4640	D	4870	D	4930	D	4870	D	5000	D	5100	D	5000	D	5000	D
710NBGP0009	Cesar Chavez off-ramp	SR 60 on-ramp	3880	C	4060	C	4040	C	3990	C	4150	C	4230	C	4150	C	4360	C	4450	C	4340	C	4340	C
710NBGP0010	SR 60 on-ramp	Cesar Chavez on-ramp	5000	C	5250	C	5240	C	5060	C	5430	C	5510	C	5410	C	5710	C	5810	C	5710	C	5710	C
710NBGP0011	Cesar Chavez on-ramp	Ramona off-ramp	5280	E	5570	E	5560	E	5350	E	5760	E	5840	E	5750	E	6020	E	6140	E	6020	E	6020	E
710NBGP0012	Ramona off-ramp	I-10 off-ramp	4780	C	5160	D	5150	D	4940	D	5380	D	5460	D	5370	D	5810	D	5930	E	5810	D	5810	D
710NBGP0013	I-10 off-ramp	EB I-10 on-ramp	1490	B	2270	B	2240	B	1700	B	2770	C	2840	C	2790	C	4190	E	4320	E	3950	E	3950	E
710NBGP0014	EB I-10 on-ramp	Busway on-ramp	1710	A	2520	B	2510	B	1920	A	3590	C	3590	C	3580	C	5940	E	6060	E	5760	D	5760	D
710NBGP0015	Busway on-ramp	WB I-10 on-ramp	1790	B	2600	B	2590	B	1990	B	3670	C	3660	C	3660	C	6030	E	6150	E	5840	D	5840	D
710NBGP0016	WB I-10 on-ramp	North of WB I-10 on-ramp	1910	B	2720	B	2710	B	2140	B														
710NBGP0015	Busway on-ramp	WB I-10 on-ramp									3670	C	3660	C	3660	C	6030	E	6150	E	5840	E	5840	E
710NBGP1002	WB I-10 on-ramp	Valley Blvd off-ramp									3690	C	3710	C	3680	C	4020	C	4170	C	3710	C	3710	C
710NBGP1003	Valley Blvd off-ramp	Del Mar off-ramp									2580	C	2620	C	2580	C	3320	D	3390	D	2880	C	2880	C
710NBGP1004	Del Mar off-ramp	WB SR 134 off-ramp									2360	C	2380	C	2370	C	2690	C	2740	C	2340	C	2340	C
710NBGP1005	WB SR 134 off-ramp	EB SR 134 off-ramp									2200	C	2310	C	2200	C	1750	B	1600	B	1720	B	1720	B
210WBG00038	EB I-210/EB SR 134 off-ramp	Walnut/Pasadena on-ramp									1980	B	2100	B	1990	B	4130	E	4070	E	3900	E	3900	E
210WBG00039	Walnut/Pasadena on-ramp	WB I-210/EB SR 134 on-ramp									2820	B	2920	B	2820	B	4870	D	4820	C	4650	C	4650	C
710NBGP2001	Northbound I-710 Tunnel 2	Northbound I-710 Tunnel 2														3170	D	3300	D	2840	C	2840	C	

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-114

Horizon Year (2035 AM) Freeway Operations Analysis Summary – Southbound I-710/SR 710
 SR 710 North Study, Los Angeles County, California

Southbound Interstate 710/State Route 710 - AM Peak Hour Analysis																								
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative													
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)			
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS
710SBGP0001	North of EB I-10 off-ramp	EB I-10 off-ramp	2640	C	4720	D	4780	D	2650	C														
710SBGP0002	EB I-10 off-ramp	WB I-10 off-ramp	2490	B	4530	C	4580	C	2500	B														
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp	2210	B	3990	E	4080	E	2220	B	3390	D	3550	D	3460	D	5970	C	5990	C	5650	C		
710SBGP0004	WB I-10 on-ramp	EB I-10/Ramona on-ramp	3860	C	4850	D	4960	D	3910	C	5230	D	5320	D	5260	D	6820	C	6910	C	6750	C		
710SBGP0005	EB I-10/Ramona on-ramp	Cesar Chavez off-ramp	5710	E	6290	F	6270	F	5650	E	6430	F	6610	F	6540	F	7060	F	7230	F	7080	F		
710SBGP0006	Cesar Chavez off-ramp	SR 60 off-ramp	5360	D	5890	E	5870	E	5290	D	5960	E	6110	E	6050	E	6500	F	6640	F	6500	F		
710SBGP0007	SR 60 off-ramp	Cesar Chavez on-ramp	4160	C	4580	C	4380	C	4320	C	4630	C	4680	D	4650	C	5240	D	5270	D	5200	D		
710SBGP0008	Cesar Chavez on-ramp	Third on-ramp	4670	C	5030	D	4860	D	4820	D	5090	D	5130	D	5140	D	5610	D	5670	D	5590	D		
710SBGP0009	Third on-ramp	Third off-ramp	4790	D	5100	D	4930	D	4900	D	5150	D	5190	D	5170	D	5640	E	5710	E	5620	E		
710SBGP0010	Third off-ramp	SR 60 on-ramp	4650	C	4950	D	4770	D	4760	D	5010	D	5050	D	5020	D	5550	D	5610	D	5530	D		
710SBGP0011	SR 60 on-ramp	Whittier/Olympic off-ramp	7890	F	7970	F	7930	F	7980	F	7940	F	8070	F	8060	F	8130	F	8250	F	8160	F		
710SBGP0012	Whittier/Olympic off-ramp	SB I-5 off-ramp	7340	D	7400	D	7370	D	7460	D	7380	D	7490	D	7480	D	7520	D	7640	E	7560	D		
710SBGP0013	SB I-5 off-ramp	Whittier/Olympic on-ramp	5660	D	5660	D	5670	D	5740	E	5690	D	5740	E	5770	E	5730	E	5790	E	5740	E		
710SBGP0014	Whittier/Olympic on-ramp	SB I-5 on-ramp	6310	F	6400	F	6380	F	6420	F	6390	F	6480	F	6460	F	6510	F	6560	F	6520	F		
710SBGP0015	SB I-5 on-ramp	South of SB I-5 on-ramp	8240	D	8350	D	8350	D	8400	D	8410	D	8440	D	8440	D	8450	D	8490	D	8470	D		
210EBGP0049	Colorado off-ramp	SR 134/I-210 on-ramp									1470	B	1740	B	1690	B								
710SBGPT1004	SR 134/I-210 on-ramp	Valley Blvd on-ramp									2590	C	2770	C	2710	C								
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp									3500	C	3640	C	3590	C								
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp									3460	E	3600	D	3550	E								
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp									3390	D	3550	D	3460	D								
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp															3500	D	3530	D	3200	C		
710SBGPT1002	WB SR134 on-ramp	EB SR134 on-ramp															1470	B	1500	B	1270	B		
710SBGPT1003	EB SR134 on-ramp	Green Street on-ramp															2170	B	2280	C	1880	B		
710SBGPT1004	Green Street on-ramp	Valley Blvd on-ramp															3460	D	3490	D	3080	C		
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp															4310	C	4330	D	3910	C		
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp															3660	E	3630	E	3430	D		
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp															5970	C	5990	C	5650	C		
710SBGPT2001	Southbound I-710 Tunnel 2	Southbound I-710 Tunnel 2															3000	C	2990	C	2780	C		

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-115

Horizon Year (2035 PM) Freeway Operations Analysis Summary – Southbound I-710/SR 710

SR 710 North Study, Los Angeles County, California

Southbound Interstate 710/State Route 710 - PM Peak Hour Analysis																									
Freeway Segment			2035 No Build Alternative		2035 TSM/TDM Alternative		2035 BRT Alternative		2035 LRT Alternative		2035 Freeway Tunnel Alternative														
			Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Single Bore (Toll)		Single Bore (Toll-No Truck)		Single Bore (Toll-Express Bus)		Dual Bore (No Toll)		Dual Bore (No Toll-No Trucks)		Dual Bore (Toll)				
Segment ID	From	To	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	Volume	LOS	
710SBGP0001	North of EB I-10 off-ramp	EB I-10 off-ramp	3460	C	5280	D	5270	D	3480	C															
710SBGP0002	EB I-10 off-ramp	WB I-10 off-ramp	3350	B	5100	D	5080	D	3360	B															
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp	3130	C	4800	F	4790	F	3150	D	3380	D	3620	D	3580	D	5690	C	5720	C	5530	C			
710SBGP0004	WB I-10 on-ramp	EB I-10/Ramona on-ramp	5360	D	6120	E	6100	E	5330	D	5540	D	5670	D	5590	D	7010	C	7080	C	6930	C			
710SBGP0005	EB I-10/Ramona on-ramp	Cesar Chavez off-ramp	7850	F	8200	F	8220	F	7830	F	8310	F	8450	F	8330	F	8420	F	8590	F	8520	F			
710SBGP0006	Cesar Chavez off-ramp	SR 60 off-ramp	7370	F	7700	F	7720	F	7350	F	7730	F	7860	F	7750	F	7810	F	7970	F	7910	F			
710SBGP0007	SR 60 off-ramp	Cesar Chavez on-ramp	5770	E	5930	E	6010	E	5770	E	6360	E	6430	E	6340	E	6840	F	6890	F	6840	F			
710SBGP0008	Cesar Chavez on-ramp	Third on-ramp	6460	F	6620	F	6690	F	6470	F	6980	F	7060	F	6970	F	7420	F	7470	F	7410	F			
710SBGP0009	Third on-ramp	Third off-ramp	6570	F	6710	F	6770	F	6580	F	7010	F	7090	F	7010	F	7440	E	7490	E	7420	F			
710SBGP0010	Third off-ramp	SR 60 on-ramp	6390	E	6510	F	6580	F	6400	E	6820	F	6880	F	6800	F	7270	F	7310	F	7240	F			
710SBGP0011	SR 60 on-ramp	Whittier/Olympic off-ramp	10,500	F	10,610	F	10,590	F	10,520	F	10,690	F	10,720	F	10,700	F	10,770	F	10,810	F	10,780	F			
710SBGP0012	Whittier/Olympic off-ramp	SB I-5 off-ramp	9830	F	9910	F	9890	F	9870	F	9950	F	9970	F	9960	F	9960	F	9980	F	9970	F			
710SBGP0013	SB I-5 off-ramp	Whittier/Olympic on-ramp	7680	F	7730	F	7730	F	7710	F	7760	F	7800	F	7770	F	7760	F	7760	F	7760	F			
710SBGP0014	Whittier/Olympic on-ramp	SB I-5 on-ramp	8650	F	8700	F	8700	F	8690	F	8740	F	8790	F	8750	F	8790	F	8790	F	8790	F			
710SBGP0015	SB I-5 on-ramp	South of SB I-5 on-ramp	11,310	F	11,370	F	11,350	F	11,370	F	11,410	F	11,460	F	11,420	F	11,460	F	11,470	F	11,470	F			
210EBGP0049	Colorado off-ramp	SR 134/I-210 on-ramp									2080	B	1770	B	1720	B									
710SBGPT1004	SR 134/I-210 on-ramp	Valley Blvd on-ramp									2790	C	3030	D	2980	D									
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp									3540	C	3750	C	3710	C									
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp									3440	D	3670	E	3640	E									
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp									3380	D	3620	D	3580	D									
210EBGP0049	Colorado off-ramp	WB SR 134/WB I-210 on-ramp															3000	C	3000	C	2830	C			
710SBGPT1002	WB SR134 on-ramp	EB SR134 on-ramp															860	A	870	A	750	A			
710SBGPT1003	EB SR134 on-ramp	Green Street on-ramp															1640	B	1690	B	1450	B			
710SBGPT1004	Green Street on-ramp	Valley Blvd on-ramp															3140	C	3140	C	2910	C			
710SBGPT1005	Valley Blvd on-ramp	EB I-10 off ramp															3840	D	3860	D	3630	C			
710SBGPT1006	EB I-10 off ramp	WB I-10 off ramp															3410	D	3400	D	3290	D			
710SBGP0003	WB I-10 off-ramp	WB I-10 on-ramp															5690	C	5720	C	5530	C			
710SBGPT2001	Southbound I-710 Tunnel 2	Southbound I-710 Tunnel 2															2690	C	2690	C	2580	C			

NOTES:

Volume is reported in *mean* vehicles per hour (vph) for traffic demand

Level of service (LOS) calculations per the 2010 Highway Capacity Manual where applicable, otherwise 2000 Highway Capacity Manual was used

TABLE 5-116

Horizon Year (2035) Volume/Capacity Ratio in I-10 Express Lanes*SR 710 North Study, Los Angeles County, California*

Alternative/Variation	Eastbound		Westbound	
	AM	PM	AM	PM
2035 No Build	0.04 - 0.17	0.25 - 0.33	0.31 - 0.51	0.14 - 0.21
2035 TSM/TDM	0.05 - 0.16	0.25 - 0.32	0.31 - 0.53	0.14 - 0.21
2035 BRT	0.05 - 0.16	0.25 - 0.33	0.30 - 0.52	0.14 - 0.21
2035 LRT	0.04 - 0.17	0.25 - 0.32	0.30 - 0.52	0.14 - 0.21
2035 Single Bore (Toll)	0.04 - 0.16	0.25 - 0.32	0.31 - 0.52	0.13 - 0.21
2035 Single Bore (Toll - No Trucks)	0.03 - 0.15	0.24 - 0.33	0.32 - 0.51	0.13 - 0.20
2035 Single Bore (Toll - Express Bus)	0.03 - 0.15	0.24 - 0.32	0.32 - 0.53	0.13 - 0.20
2035 Dual Bore (No Toll)	0.08 - 0.16	0.27 - 0.33	0.34 - 0.55	0.17 - 0.26
2035 Dual Bore (No Toll - No Trucks)	0.07 - 0.15	0.27 - 0.35	0.34 - 0.55	0.16 - 0.26
2035 Dual Bore (Toll)	0.05 - 0.16	0.26 - 0.34	0.33 - 0.55	0.15 - 0.24

TABLE 5-117

Horizon Year (2035) Intersection Operations Summary
 SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	2035 Freeway Tunnel Alternative																																							
			2035 No Build Alternative				2035 TSM/TDM Alternative				2035 BRT Alternative				2035 LRT Alternative				Single Bore (Toll)				Single Bore (Toll-No Trucks)				Single Bore (Toll-Express Bus)				Dual Bore (No Toll)				Dual Bore (No Toll-No Trucks)				Dual Bore (Toll)			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM					
Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS									
1	Atlantic Boulevard / Glendon Way	Signal	77.1	E	22.6	C	11.4	B	8.9	A	11.4	B	8.9	A	12.9	B	9.6	A	12.1	B	9.3	A	11.6	B	8.9	A	12.0	B	9.2	A	11.8	B	9.0	A	11.7	B	8.9	A	11.8	B	9.0	A
2	Atlantic Boulevard / Main Street	Signal	42.6	D	46.2	D	45.5	D	57.6	E	45.6	D	51.3	D	43.8	D	51.9	D	37.1	D	38.9	D	34.8	C	37.5	D	36.6	D	38.4	D	34.4	C	35.8	D	34.3	C	35.5	D	34.4	C	35.8	D
3	Atlantic Boulevard / Mission Road	Signal	39.7	D	67.4	E	46.6	D	86.8	F	47.1	D	89.4	F	42.7	D	70.8	E	36.4	D	62.2	E	34.1	C	60.1	E	35.3	D	62.5	E	37.0	D	59.0	E	35.8	D	58.2	E	37.0	D	59.0	E
4	Atlantic Boulevard / Valley Boulevard	Signal	47.7	D	57.1	E	45.1	D	54.0	D	45.3	D	54.7	D	75.6	E	57.0	E	48.7	D	57.7	E	46.0	D	54.2	D	47.8	D	57.1	E	46.7	D	55.8	E	46.2	D	54.7	D	46.7	D	55.8	E
5	Fremont Avenue / Commonwealth Avenue	Signal	21.4	C	32.1	C	25.1	C	37.8	D	25.0	C	37.2	D	20.8	C	29.4	C	17.4	B	24.2	C	17.0	B	23.4	C	17.2	B	23.9	C	16.3	B	21.9	C	16.2	B	21.7	C	16.3	B	21.9	C
6	Fremont Avenue / Concord Avenue	Signal	13.3	B	13.6	B	19.8	B	20.9	C	21.2	C	20.6	C	12.7	B	14.2	B	11.7	B	12.9	B	11.3	B	12.4	B	11.5	B	12.4	B	9.6	A	11.8	B	10.9	B	11.7	B	9.6	A	11.8	B
7	Fremont Avenue / Hellman Avenue	Signal	48.2	D	48.0	D	24.2	C	29.5	C	24.3	C	29.4	C	28.5	C	36.7	D	32.0	C	42.3	D	30.4	C	39.4	D	31.6	C	38.9	D	30.6	C	38.1	D	30.0	C	38.7	D	30.6	C	38.1	D
8	Fremont Avenue / Main Street	Signal	27.9	C	36.8	D	30.3	C	39.8	D	30.9	C	39.9	D	28.1	C	37.6	D	24.8	C	27.8	C	24.5	C	27.0	C	24.6	C	27.1	C	23.1	C	24.2	C	23.1	C	23.9	C	23.1	C	24.2	C
9	Fremont Avenue / Mission Road	Signal	51.2	D	69.8	E	122.5	F	126.3	F	122.3	F	118.7	F	69.8	E	95.7	F	50.4	D	72.8	E	47.8	D	73.0	E	48.1	D	71.7	E	42.8	D	62.9	E	41.9	D	62.2	E	42.8	D	62.9	E
10	Fremont Avenue / Norwood Avenue	TWSC	71.6	F	OVF	F	38.9	E	OVF	F	39.5	E	438.9	F	58.2	F	OVF	F	112.6	F	OVF	F	89.4	F	OVF	F	118.7	F	OVF	F	95.3	F	OVF	F	85.8	F	OVF	F	95.3	F	OVF	F
11	Fremont Avenue / Poplar Boulevard	Signal	10.5	B	8.8	A	13.0	B	10.4	B	10.2	B	10.4	B	10.7	B	8.8	A	9.7	A	9.4	A	9.5	A	9.2	A	9.5	A	9.3	A	8.9	A	8.7	A	8.8	A	8.6	A	8.9	A	8.7	A
12	Fremont Avenue / Valley Boulevard	Signal	48.5	D	51.2	D	41.4	D	40.7	D	40.2	D	41.0	D	47.6	D	52.4	D	50.6	D	49.9	D	44.9	D	48.5	D	48.3	D	49.8	D	39.4	D	43.2	D	43.0	D	41.5	D	39.4	D	43.2	D
13	Garfield Avenue / Glendon Way	Signal	19.2	B	17.6	B	10.3	B	8.1	A	10.2	B	23.4	C	10.8	B	9.0	A	10.9	B	8.5	A	10.9	B	8.6	A	10.8	B	8.5	A	10.6	B	9.7	A	10.6	B	9.7	A	10.6	B	9.7	A
14	Garfield Avenue / Main Street	Signal	31.2	C	51.7	D	31.4	C	55.4	E	31.4	C	55.6	E	32.0	C	48.3	D	30.6	C	41.7	D	30.1	C	40.7	D	30.8	C	41.4	D	29.8	C	38.9	D	30.0	C	38.1	D	29.8	C	38.9	D
15	Garfield Avenue / Mission Road	Signal	55.5	E	72.7	E	49.0	D	67.2	E	48.8	D	68.5	E	47.7	D	60.9	E	41.9	D	56.4	E	40.6	D	55.7	E	40.5	D	54.8	D	39.6	D	53.0	D	38.6	D	52.2	D	39.6	D	53.0	D
16	Garfield Avenue / Norwood Place	TWSC	10.7	B	9.7	A	27.1	D	21.1	C	23.9	C	21.2	C	39.5	E	22.0	C	27.2	D	21.9	C	27.4	D	21.9	C	26.9	D	18.7	C	35.1	E	21.2	C	35.5	E	21.2	C	35.1	E	21.2	C
17	Garfield Avenue / Valley Boulevard	Signal	43.6	D	51.3	D	41.7	D	50.1	D	40.9	D	49.7	D	83.1	F	55.6	E	40.8	D	50.3	D	41.0	D	49.8	D	40.8	D	49.9	D	36.2	D	46.4	D	35.8	D	46.2	D	36.2	D	46.4	D
18	Huntington Drive / Main Street	Signal	0.7	A	0.7	A	0.7	A	0.7	A	0.7	A	0.7	A	0.7	A	0.7	A	0.9	A	0.6	A	0.9	A	0.5	A	0.9	A	0.6	A	0.9	A	0.5	A	0.9	A	0.6	A	0.9	A	0.5	A
19	SR 710 NB Off-Ramp / Valley Boulevard	Signal	33.5	C	17.2	B	547.6	F	622.9	F	623.7	F	649.8	F	447.7	F	562.5	F	17.8	B	22.6	C	17.7	B	22.3	C	17.4	B	22.4	C	16.3	B	10.2	B	16.3	B	15.0	B	16.2	B	13.9	B
20	SR 710 SB On-Ramp / Valley Boulevard	Signal	51.7	D	95.3	F	Valley Boulevard/SR 710 ramp terminals is one intersection with these alternatives										7.5	A	4.9	A	7.6	A	4.6	A	7.7	A	4.7	A	7.3	A	6.3	A	7.3	A	5.2	A	7.3	A	5.0	A		
21	Baldwin Avenue / Foothill Boulevard	Signal	19.6	B	29.2	C	19.7	B	28.7	C	19.7	B	28.9	C	19.3	B	26.9	C	19.3	B	27.6	C	18.7	B	27.3	C	19.1	B	24.8	C	19.7	B	24.5	C	19.1	B	24.8	C	19.1	B	24.8	C
22	Baldwin Avenue / Huntington Drive	Signal	39.6	D	55.9	E	40.1	D	56.4	E	39.8	D	56.7	E	40.5	D	58.6	E	40.0	D	54.2	D	39.9	D	55.1	E	40.3	D	54.4	D	38.9	D	46.9	D	38.9	D	46.0	D	39.6	D	46.9	D
23	Santa Anita Avenue / Duarte Road	Signal	28.3	C	23.6	C	28.7	C	23.1	C	28.8	C	23.0	C	32.4	C	23.8	C	26.4	C	22.0	C	27.0	C	23.9	C	27.0	C	22.0	C	24.0	C	20.6	C	23.7	C	20.3	C	23.7	C	22.4	C
24	Santa Anita Avenue / Live Oak Avenue	Signal	32.1	C	33.5	C	32.0	C	33.3	C	32.0	C	33.3	C	32.9	C	33.6	C	31.6	C	33.0	C	31.5	C	33.2	C	31.7	C	33.2	C	31.2	C	32.1	C	31.2	C	31.8	C	31.1	C	32.1	C
25	Sunset Boulevard / Huntington Drive	Signal	62.4	E	62.0	E	63.2	E	62.8	E	63.1	E	63.1	E	65.4	E	64.1	E	62.7	E	64.8	E	62.1	E	64.5	E	63.4	E	65.4	E	59.8	E	60.3	E	58.9	E	58.8	E	59.8	E	60.3	E
26	I-605 NB Ramps / Ramona Boulevard	Signal	36.5	D	43.0	D	37.7	D	43.0	D	37.8	D	43.2	D	36.5	D	46.0	D	37.6	D	39.7	D	39.1	D	43.7	D	37.2	D	43.1	D	37.6	D	44.3	D	37.5	D	39.9	D	38.1	D	40.5	D
27	Atlantic Boulevard / Beverly Boulevard	Signal	32.1	C	50.6	D	31.5	C	49.9	D	31.9	C	49.1	D	32.1	C	49.8	D	33.3	C	51.6	D	32.2	C	50.3	D	33.4	C	51.7	D	33.7	C	52.8	D	33.8	C	52.6	D	33.7	C	52.8	D
28	Atlantic Boulevard / Pomona Boulevard	Signal	37.5	D	54.9	D	37.2	D	54.0	D	37.3	D	54.8	D	37.8	D	55.4	D	38.2	D	51.6	D	37.4	D	54.1	D	38.1	D	51.6	D	38.7	D	53.4	D	38.8	D	53.7	D	38.7	D	53.4	D
29	Atlantic Boulevard / Whittier Boulevard	Signal	27.3	C	39.5	D	27.4	C	39.9	D	27.2	C	39.5	D	27.6	C	39.4	D	28.3	C	41.9	D	27.4	C	39.3	D	27.8	C	42.1	D	28.2	C	44.3	D	28.3	C	43.9	D	28.5	C	44.3	D
30	Campus Road / Ramona Boulevard	Signal	29.7	C	20.0	C	26.3	C	18.8	B	26.6	C	18.8	B	28.5	C	19.7	B	31.4	C	19.2	B	28.8	C	19.2	B	33.9	C	19.1	B	33.1	C	19.8	B	33.8	C	19.8	B	33.1	C	19.8	B
31	Rosemead Boulevard / California Boulevard	Signal	27.6	C	32.1	C	29.1	C	32.9	C	28.6	C	33.6	C	29.2	C	33.8	C	26.5	C	30.7	C	25.5	C	30.8	C	25.4	C	31.2	C	23.8	C	27.4	C	23.7	C	26.4	C	23.7	C	27.4	C
32	Rosemead Boulevard / Colorado Boulevard	Signal	38.8	D	116.5	F	38.4	D	120.6	F	41.2	D	99.7	F	41.0	D	108.5	F	36.0	D	89.2	F	36.6	D	81.8	F	36.6	D	77.7	E	33.1	C	55.9	E	33.1	C	56.2	E	33.1	C	55.9	E
33	Baldwin Avenue / Valley Boulevard	Signal	36.5	D	47.1	D	35.9	D	48.7	D	35.9	D	48.2	D	36.2	D	49.0	D	35.8	D	48.5	D	35.1	D	45.6	D	35.8	D	48.0	D	36.0	D	47.5	D	36.0	D	47.0	D	36.0	D	47.5	D
34																																										

TABLE 5-117

Horizon Year (2035) Intersection Operations Summary
 SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	2035 Freeway Tunnel Alternative																																							
			2035 No Build Alternative				2035 TSM/TDM Alternative				2035 BRT Alternative				2035 LRT Alternative				Single Bore (Toll)				Single Bore (Toll-No Trucks)				Single Bore (Toll-Express Bus)				Dual Bore (No Toll)				Dual Bore (No Toll-No Trucks)				Dual Bore (Toll)			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM					
Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS									
51	I-210 WB Ramps / Berkshire Place	TWSC	18.5	C	12.2	B	18.7	C	12.2	B	18.7	C	12.3	B	18.5	C	12.3	B	23.2	C	15.4	C	22.1	C	15.8	C	23.2	C	15.0	C	39.7	E	19.8	C	32.3	D	16.3	C	40.1	E	19.8	C
52	I-210 WB Ramps / Foothill Boulevard	Signal	16.2	B	12.7	B	15.4	B	13.0	B	15.5	B	12.9	B	16.0	B	13.3	B	17.0	B	15.7	B	16.9	B	16.2	B	17.2	B	15.8	B	18.4	B	29.1	C	18.5	B	29.6	C	18.4	B	29.1	C
53	Ocean View Boulevard / Foothill Boulevard	Signal	27.0	C	28.3	C	27.2	C	28.2	C	27.2	C	28.1	C	27.8	C	27.9	C	28.6	C	27.2	C	30.2	C	27.1	C	28.9	C	27.0	C	29.4	C	27.7	C	29.1	C	28.0	C	29.4	C	27.7	C
54	SR 2 Ramps / Foothill Boulevard	Signal	12.1	B	23.5	C	12.1	B	22.3	C	12.2	B	23.3	C	12.1	B	23.5	C	11.8	B	22.9	C	11.8	B	21.9	C	11.8	B	22.0	C	11.3	B	23.3	C	11.7	B	22.1	C	11.7	B	23.4	C
55	Verdugo Boulevard / Foothill Boulevard	Signal	21.6	C	21.5	C	21.6	C	21.6	C	21.6	C	21.6	C	21.6	C	21.5	C	22.3	C	23.7	C	22.6	C	24.3	C	22.4	C	23.6	C	23.3	C	27.6	C	23.3	C	28.1	C	23.3	C	27.6	C
56	Avenue 20 / Broadway	Signal	20.4	C	16.8	B	24.1	C	17.8	B	23.8	C	17.3	B	24.2	C	16.8	B	24.5	C	16.4	B	24.5	C	17.1	B	24.9	C	16.4	B	23.4	C	16.8	B	23.5	C	16.7	B	23.4	C	16.8	B
57	Avenue 64 / York Boulevard	Signal	23.1	C	25.2	C	22.9	C	24.7	C	22.7	C	24.7	C	23.2	C	25.2	C	22.7	C	24.1	C	23.3	C	23.5	C	23.0	C	24.0	C	22.8	C	23.6	C	22.2	C	23.5	C	22.8	C	23.6	C
58	Broadway / Colorado Boulevard	Signal	14.9	B	160.1	F	16.5	B	181.1	F	16.5	B	177.3	F	16.6	B	176.1	F	17.3	B	190.5	F	17.3	B	187.0	F	17.3	B	191.3	F	17.2	B	186.7	F	17.5	B	191.1	F	17.2	B	186.7	F
59	Collis Avenue / Huntington Drive	Signal	49.2	D	18.9	B	20.6	C	19.9	B	19.7	B	20.1	C	19.9	B	18.8	B	18.6	B	21.2	C	18.4	B	21.1	C	18.7	B	20.9	C	17.7	B	20.7	C	17.6	B	20.5	C	17.8	B	20.7	C
60	Concord Avenue / Alhambra Avenue	TWSC	40.8	E	113.2	F	OVF	F	OVF	F	OVF	F	OVF	F	33.3	D	123.7	F	29.7	D	100.4	F	30.7	D	OVF	F	29.1	D	71.7	F	28.8	D	52.8	F	27.6	D	53.3	F	28.8	D	52.8	F
61	Daly Street / Broadway	Signal	88.2	F	38.3	D	80.3	F	36.5	D	75.3	E	35.5	D	76.5	E	37.2	D	73.0	E	36.0	D	72.5	E	34.7	C	73.9	E	35.5	D	69.2	E	33.1	C	68.6	E	32.3	C	69.2	E	33.1	C
62	Eagle Rock Boulevard / SR 2 Ramps	Signal	36.6	D	37.8	D	35.6	D	39.6	D	36.5	D	38.7	D	34.2	C	39.5	D	36.9	D	37.2	D	39.0	D	38.1	D	37.2	D	37.3	D	40.2	D	38.2	D	38.9	D	38.1	D	40.6	D	38.1	D
63	Eagle Rock Boulevard / Verdugo Road/Avenue 40	Signal	30.6	C	50.0	D	32.4	C	61.5	E	32.4	C	46.6	D	36.5	D	47.0	D	34.6	C	51.6	D	35.9	D	50.8	D	35.4	D	51.4	D	33.1	C	47.7	D	32.8	C	47.4	D	33.1	C	47.7	D
64	Eagle Rock Boulevard / York Boulevard	Signal	15.7	B	20.6	C	17.2	B	25.6	C	17.1	B	25.5	C	17.3	B	26.3	C	17.2	B	24.0	C	17.1	B	23.5	C	17.1	B	23.9	C	16.7	B	23.7	C	16.6	B	23.5	C	16.7	B	23.7	C
65	Eastern Avenue / Huntington Drive	Signal	28.1	C	165.0	F	21.3	C	36.7	D	21.5	C	36.7	D	21.5	C	41.0	D	18.3	B	32.8	C	18.0	B	31.8	C	18.3	B	32.4	C	17.0	B	29.3	C	16.8	B	28.4	C	16.7	B	29.3	C
66	Figueroa Street / Avenue 26	Signal	53.4	D	38.3	D	52.2	D	38.2	D	49.7	D	36.7	D	58.1	E	37.4	D	51.3	D	35.1	D	53.4	D	32.6	C	54.5	D	34.1	C	58.6	E	34.2	C	49.7	D	33.4	C	58.6	E	34.2	C
67	Figueroa Street / Colorado Boulevard	Signal	36.4	D	17.0	B	38.4	D	16.5	B	37.2	D	16.5	B	40.2	D	16.5	B	39.6	D	17.3	B	43.4	D	17.9	B	39.0	D	17.2	B	43.8	D	17.7	B	49.1	D	17.8	B	43.8	D	17.7	B
68	Figueroa Street / SR 134 EB Ramps	Signal	1.0	A	1.0	A	9.1	A	9.8	A	9.1	A	9.8	A	9.1	A	9.8	A	9.2	A	9.7	A	9.2	A	9.8	A	9.2	A	9.8	A	9.1	A	9.7	A	9.1	A	9.7	A	9.1	A	9.7	A
69	Figueroa Street / SR 134 WB Ramps	Signal ¹	20.2	C	44.3	E	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.3	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.2	A	3.4	A	3.3	A	3.4	A
70	Figueroa Street / York Boulevard	Signal	26.2	C	25.1	C	25.9	C	25.2	C	26.0	C	25.1	C	26.0	C	24.5	C	26.4	C	24.5	C	27.6	C	24.3	C	27.7	C	24.6	C	26.8	C	24.2	C	27.0	C	23.8	C	26.8	C	23.7	C
71	Griffin Avenue / Broadway	Signal	18.8	B	20.3	C	18.4	B	23.7	C	18.2	B	23.4	C	18.5	B	24.6	C	22.1	C	24.9	C	18.2	B	23.7	C	18.0	B	24.5	C	17.3	B	23.9	C	17.4	B	25.4	C	17.3	B	23.9	C
72	Huntington Drive / Monterey Road	Signal	53.7	D	33.4	C	96.4	F	41.1	D	95.6	F	40.7	D	85.4	F	40.9	D	47.0	D	34.8	C	42.4	D	34.7	C	43.1	D	35.1	D	37.9	D	29.3	C	37.4	D	28.5	C	37.9	D	29.3	C
73	Marengo Street / Mission Road	Signal	36.8	D	46.1	D	38.6	D	39.7	D	38.2	D	42.5	D	38.7	D	39.9	D	36.6	D	39.1	D	35.6	D	38.6	D	38.1	D	39.1	D	37.4	D	37.7	D	36.9	D	38.4	D	37.4	D	37.7	D
74	Pasadena Avenue / Broadway	Signal	192.9	F	25.4	C	170.5	F	25.2	C	177.1	F	25.4	C	199.9	F	25.8	C	191.3	F	26.4	C	195.5	F	25.9	C	193.0	F	26.5	C	165.3	F	26.5	C	157.8	F	26.6	C	165.3	F	26.5	C
75	San Pasqual Avenue / York Boulevard	Signal	15.1	B	15.6	B	15.1	B	15.9	B	13.6	B	12.6	B	13.6	B	12.8	B	13.7	B	12.9	B	13.7	B	12.8	B	13.7	B	12.8	B	13.6	B	12.7	B	13.6	B	12.8	B	13.6	B	12.8	B
76	Soto Street / Marengo Street	Signal	17.1	B	12.8	B	16.5	B	15.6	B	16.5	B	15.6	B	16.9	B	16.0	B	16.2	B	15.5	B	16.4	B	15.4	B	16.2	B	15.5	B	16.6	B	15.2	B	16.4	B	15.1	B	16.6	B	15.2	B
77	Myrtle Avenue / Duarte Road	Signal	48.6	D	49.2	D	47.1	D	47.8	D	47.0	D	48.0	D	48.9	D	48.7	D	45.6	D	48.0	D	45.8	D	47.3	D	45.8	D	48.0	D	42.0	D	44.3	D	42.1	D	44.5	D	42.0	D	44.6	D
78	Myrtle Avenue / I-210 EB Ramps	Signal	27.5	C	38.0	D	27.0	C	38.0	D	27.1	C	36.9	D	28.0	C	38.0	D	26.2	C	37.4	D	26.2	C	37.0	D	26.5	C	38.2	D	24.6	C	35.0	D	25.9	C	34.5	C	24.6	C	35.0	D
79	Atlantic Boulevard / Cesar Chavez Avenue	Signal	35.3	D	54.3	D	34.8	C	53.8	D	33.8	C	52.7	D	35.9	D	53.7	D	36.3	D	56.0	E	35.9	D	53.0	D	36.5	D	54.5	D	37.3	D	57.7	E	36.4	D	55.3	E	37.3	D	57.7	E
80	Atlantic Boulevard / Garvey Avenue	Signal	41.7	D	61.7	E	39.4	D	63.4	E	39.5	D	60.1	E	39.9	D	61.6	E	40.0	D	62.2	E	38.7	D	57.9	E	39.6	D	62.1	E	40.6	D	60.7	E	40.9	D	60.8	E	40.6	D	60.7	E
81	Atlantic Boulevard / SR 60 EB Ramps	Signal	10.5	B	15.2	B	10.2	B	15.2	B	10.3	B	15.3	B	10.4	B	15.2	B	10.3	B	15.4	B	10.7	B	15.4	B	10.7	B	15.4	B	10.3	B	15.7	B	10.7	B	15.8	B	10.4	B	15.7	B
82	Atlantic Boulevard / SR 60 WB Ramps	Signal	17.4	B	17.4	B	16.3	B	18.1	B	16.3	B	17.4	B	16.9	B	18.6	B	16.3	B	18.9	B	17.2	B	18.4	B	17.4	B	19.0	B	18.1	B	20.8	C	17.4	B	20.9	C	18.0	B	21.0	C
83	McDonnell Avenue/Corporate Center Drive / Floral Drive	Signal	22.7	C	22.9	C	22.4	C	21.6	C	22.5	C	21.7	C	22.6	C	22.0	C	22.8	C	23.0	C	22.																			

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Horizon Year (2035) Intersection Operations Summary
 SR 710 North Study, Los Angeles County, California

No.	Intersection	Control	2035 Freeway Tunnel Alternative																																							
			2035 No Build Alternative				2035 TSM/TDM Alternative				2035 BRT Alternative				2035 LRT Alternative				Single Bore (Toll)				Single Bore (Toll-No Trucks)				Single Bore (Toll-Express Bus)				Dual Bore (No Toll)				Dual Bore (No Toll-No Trucks)				Dual Bore (Toll)			
			AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM					
Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS									
101	Lincoln Avenue / Orange Grove Boulevard	Signal	13.3	B	12.7	B	14.0	B	13.1	B	13.8	B	13.1	B	13.5	B	20.0	B	14.4	B	12.8	B	14.4	B	12.8	B	14.3	B	12.8	B	14.3	B	12.2	B	14.2	B	12.1	B	14.3	B	12.2	B
102	Los Robles Avenue / Colorado Boulevard	Signal	13.8	B	15.7	B	13.8	B	16.1	B	13.6	B	15.7	B	13.8	B	16.1	B	13.8	B	15.2	B	13.7	B	15.2	B	13.8	B	15.1	B	13.3	B	14.2	B	13.2	B	14.1	B	13.3	B	14.2	B
103	Los Robles Avenue / Walnut Street	Signal	14.6	B	23.0	C	14.8	B	19.2	B	14.7	B	22.7	C	14.7	B	27.2	C	14.1	B	15.1	B	14.7	B	15.0	B	14.7	B	15.2	B	15.7	B	15.5	B	15.8	B	15.3	B	15.7	B	15.5	B
104	Marengo Avenue / Colorado Boulevard	Signal	17.9	B	19.9	B	17.8	B	19.8	B	17.7	B	19.1	B	18.1	B	19.6	B	17.5	B	18.9	B	17.3	B	18.6	B	17.6	B	19.0	B	17.0	B	18.5	B	16.8	B	18.4	B	17.0	B	18.5	B
105	Marengo Street / Corson Street (I-210 EB Ramps)	Signal	17.4	B	15.3	B	18.0	B	15.8	B	18.1	B	15.9	B	17.3	B	15.6	B	17.7	B	14.6	B	17.2	B	14.3	B	17.4	B	14.6	B	16.4	B	14.5	B	15.9	B	14.8	B	16.4	B	14.5	B
106	Marengo Street / Maple Street (I-210 WB Ramps)	Signal	25.5	C	36.5	D	25.9	C	36.3	D	25.8	C	36.5	D	24.9	C	32.2	C	25.3	C	36.4	D	25.8	C	39.8	D	25.3	C	38.8	D	24.6	C	29.9	C	24.9	C	30.2	C	24.6	C	29.9	C
107	Orange Grove Boulevard / Colorado Boulevard	Signal	19.7	B	17.8	B	22.3	C	18.3	B	22.3	C	18.4	B	22.3	C	18.5	B	55.1	E	27.7	C	47.4	D	26.9	C	49.7	D	27.3	C	43.9	D	24.4	C	43.8	D	24.2	C	43.9	D	24.4	C
108	Orange Grove Boulevard / Walnut Street	Signal	6.1	A	7.4	A	6.3	A	7.5	A	6.3	A	7.6	A	6.2	A	7.6	A	8.7	A	8.1	A	8.5	A	8.1	A	8.4	A	8.1	A	8.1	A	8.0	A	8.1	A	7.9	A	8.1	A	8.0	A
109	Saint John Avenue / California Boulevard	Signal	28.8	C	22.0	C	49.1	D	29.2	C	49.5	D	29.1	C	79.4	E	28.1	C	17.5	B	14.2	B	16.7	B	15.3	B	16.3	B	15.1	B	15.2	B	14.9	B	14.9	B	14.5	B	15.2	B	14.5	B
110	Saint John Avenue / Colorado Boulevard	Signal	12.7	B	13.1	B	12.7	B	13.9	B	12.6	B	13.3	B	13.2	B	14.0	B	14.3	B	15.4	B	14.5	B	22.8	C	14.5	B	22.5	C	14.6	B	24.5	C	14.5	B	21.9	C	14.6	B	24.5	C
111	Saint John Avenue / Del Mar Boulevard	Signal	8.4	A	8.9	A	29.9	C	15.8	B	24.8	C	17.2	B	23.3	C	16.9	B	41.3	D	22.2	C	46.3	D	23.6	C	41.3	D	22.2	C	39.8	D	19.1	B	40.4	D	18.2	B	40.4	D	19.5	B
112	San Rafael Avenue / SR 134 EB Ramps	Signal	26.8	C	46.1	D	26.2	C	41.0	D	26.3	C	40.4	D	26.4	C	43.8	D	29.8	C	38.9	D	23.6	C	40.2	D	34.3	C	40.7	D	35.6	D	42.1	D	34.5	C	39.2	D	34.8	C	39.6	D
113	San Rafael Avenue / SR 134 WB Ramps	Signal	14.9	B	16.0	B	15.4	B	15.7	B	15.1	B	16.4	B	14.6	B	15.0	B	13.0	B	16.3	B	14.6	B	16.4	B	15.6	B	17.7	B	16.0	B	16.2	B	16.5	B	15.9	B	13.8	B	16.5	B
114	Sierra Madre Boulevard / Del Mar Boulevard	Signal	33.7	C	34.3	C	33.9	C	32.9	C	34.4	C	32.8	C	38.1	D	32.7	C	27.3	C	31.9	C	27.5	C	31.7	C	27.4	C	31.4	C	26.5	C	26.8	C	26.6	C	25.9	C	25.4	C	26.8	C
115	Rosemead Boulevard / Lower Azusa Road	Signal	26.5	C	25.3	C	100.9	F	59.9	E	55.5	E	45.8	D	58.1	E	47.0	D	50.2	D	39.6	D	50.0	D	39.6	D	50.2	D	39.4	D	44.5	D	34.0	C	44.5	D	33.1	C	44.5	D	34.0	C
116	Rosemead Boulevard / Marshall Street	Signal	35.4	D	48.1	D	19.5	B	35.2	D	19.5	B	32.3	C	20.0	B	33.6	C	19.2	B	33.9	C	19.1	B	34.1	C	19.2	B	31.6	C	19.1	B	30.3	C	19.0	B	29.8	C	19.6	B	30.3	C
117	Rosemead Boulevard / Mission Drive	Signal	45.5	D	50.3	D	86.2	F	72.1	E	87.3	F	67.1	E	95.3	F	70.2	E	82.8	F	69.4	E	81.2	F	65.7	E	82.4	F	66.0	E	76.4	E	62.7	E	75.7	E	62.1	E	76.4	E	62.7	E
118	Rosemead Boulevard / Valley Boulevard	Signal	56.4	E	56.0	E	49.0	D	63.8	E	49.2	D	58.3	E	48.2	D	59.4	E	46.4	D	61.8	E	46.5	D	56.8	E	46.5	D	57.7	E	44.6	D	55.4	E	44.1	D	54.7	D	44.6	D	55.4	E
119	Temple City Boulevard / Valley Boulevard	Signal	67.4	E	63.2	E	60.3	E	52.6	D	59.4	E	52.3	D	62.2	E	53.2	D	58.8	E	51.7	D	57.0	E	50.2	D	58.4	E	50.7	D	55.4	E	47.6	D	54.1	D	46.8	D	55.4	E	47.6	D
120	Walnut Grove Avenue / Mission Drive	Signal	13.7	B	14.1	B	12.5	B	13.7	B	12.5	B	13.7	B	13.0	B	13.9	B	12.5	B	13.1	B	12.2	B	13.2	B	12.4	B	13.0	B	11.5	B	11.5	B	11.4	B	11.0	B	11.5	B	11.5	B
121	Walnut Grove Avenue / Valley Boulevard	Signal	20.7	C	25.7	C	23.0	C	28.2	C	23.0	C	28.3	C	26.1	C	32.8	C	24.9	C	29.3	C	24.8	C	28.9	C	22.9	C	28.7	C	22.5	C	28.1	C	22.9	C	28.7	C	22.9	C	28.7	C
122	Del Mar Avenue / Mission Road	Signal	97.3	F	66.7	E	124.0	F	79.9	E	128.4	F	79.3	E	167.4	F	92.6	F	118.6	F	71.4	E	118.5	F	77.9	E	113.4	F	67.7	E	105.9	F	47.7	D	99.6	F	44.3	D	105.9	F	47.7	D
123	Del Mar Avenue / Valley Boulevard	Signal	41.4	D	68.5	E	44.4	D	79.0	E	43.1	D	77.1	E	49.4	D	75.5	E	43.5	D	59.6	E	42.6	D	70.8	E	43.6	D	59.8	E	42.2	D	72.6	E	42.2	D	71.6	E	42.2	D	72.6	E
124	Rosemead Boulevard / Huntington Drive	Signal	34.6	C	53.2	D	36.5	D	53.4	D	36.5	D	53.6	D	36.8	D	54.6	D	34.3	C	52.3	D	33.8	C	51.5	D	34.0	C	51.1	D	32.5	C	47.4	D	32.1	C	46.9	D	32.5	C	47.4	D
125	San Gabriel Boulevard / Las Tunas Drive	Signal	58.3	E	103.0	F	57.1	E	103.1	F	56.9	E	102.3	F	57.8	E	103.4	F	54.2	D	97.5	F	53.3	D	95.5	F	53.5	D	96.1	F	50.9	D	89.4	F	50.1	D	86.8	F	50.9	D	89.4	F
126	San Gabriel Boulevard / Marshall Street	Signal	118.1	F	79.2	E	19.5	B	16.5	B	19.7	B	15.7	B	19.7	B	15.9	B	18.7	B	16.0	B	18.6	B	15.4	B	18.8	B	14.7	B	18.4	B	17.4	B	18.3	B	14.6	B	18.4	B	17.4	B
127	San Gabriel Boulevard / Mission Road	Signal	27.6	C	25.3	C	27.6	C	24.2	C	27.8	C	24.3	C	28.6	C	26.3	C	27.9	C	24.0	C	26.5	C	23.9	C	27.7	C	24.0	C	25.7	C	23.0	C	25.6	C	22.5	C	25.7	C	23.0	C
128	San Gabriel Boulevard / Valley Boulevard	Signal	49.7	D	77.3	E	44.0	D	75.5	E	44.1	D	74.0	E	45.0	D	76.0	E	42.6	D	73.0	E	42.4	D	71.3	E	42.4	D	72.0	E	41.2	D	65.9	E	41.4	D	64.8	E	41.2	D	65.9	E
129	Walnut Grove Avenue / Broadway	Signal	15.6	B	29.6	C	17.3	B	21.9	C	17.3	B	22.6	C	17.6	B	26.1	C	17.9	B	22.0	C	17.6	B	22.3	C	16.6	B	21.8	C	16.7	B	19.9	B	15.8	B	19.3	B	16.7	B	19.9	B
130	Atlantic Boulevard / Garfield Avenue	Signal	27.4	C	26.7	C	25.9	C	33.4	C	26.7	C	33.8	C	25.6	C	34.0	C	24.5	C	29.3	C	24.1	C	28.4	C	24.2	C	28.5	C	22.6	C	28.3	C	22.4	C	27.9	C	22.6	C	28.3	C
131	Atlantic Boulevard / Huntington Drive	Signal	59.1	E	40.4	D	76.2	E	42.2	D	70.5	E	42.2	D	35.5	D	40.5	D	33.4	C	35.3	D	35.7	D	36.4	D	33.1	C	35.5	D	31.5	C	32.7	C	33.3	C	32.4	C	31.5	C	32.7	C
132	Del Mar Avenue / Huntington Drive	Signal	30.0	C	28.4	C	27.8	C	27.8	C	27.8	C	27.8	C	28.2	C	27.9	C	28.2	C	30.6	C	28.1	C	30.6	C	28.4	C	31.1	C	27.4	C	29.7	C	27.1	C	28.9	C	27.4	C	29.7	C
133	El Molino Avenue / Huntington Drive	TWSC	39.8	E	18.7	C	36.0	E	20.4	C	37.3	E	20.2	C	36.7	E	20.0	C	30.7	D	17.5	C	29.8	D	17.1	C	30.5	D	17.2	C	25.6	D	15.2	C	25.6	D	15.0	C	25.6	D	15.2	C
134	Garfield Avenue / Huntington Drive	Signal	16.3	B	15.2	B	16.6	B	15.8	B	16.6	B	15.8	B	16.9	B	15.9	B	16.4	B	15.9	B	17.1	B	15.9	B	16.4	B	15.9	B	16.2	B	15.8	B	17.1	B	15.7	B	16.2	B	15.8	B
135	Oak Knoll Avenue / Huntington Drive	Signal	18.1	B	12.2	B	26.5	C	27.2	C	27.0	C	26.1	C	25.8	C	12.8	B	19.9	B	12.5	B	19.8	B	12.8	B	23.3	C	12.6	B	17.8	B	11.9	B	16.8	B	11.8	B	17.8	B	11.9	B
136	San Gabriel Boulevard / Huntington Drive	Signal	53.7	D	52.4	D	57.8	E	77.5	E	57.6	E	61.7	E	50.8	D	62.3	E	57.8	E	86.2	F	49.7	D	68.5	E	50.0	D	69.4	E	48.4	D	61.9	E	47.9	D	59.5	E	48.4	D	61.9	E
137	San Marino Avenue / Huntington Drive	Signal	52.3	D	39.4	D	26.2	C	25.3	C	25.8	C	25.5	C	26.3	C	23.6	C	26.9	C	23.0	C	26.3	C	23.0	C	27.0	C	22.9	C	24.6	C	19.9	B	24.1	C	19.5	B	24.6	C	19.9	B
138	Virginia Road / Huntington Drive	Signal	35.1	D	32.8	C	29																																			

TABLE 5-118

Freeway LOS Comparison Summary: 2035 No Build vs. Existing (2013)

SR 710 North Study, Los Angeles County, California

		2035 No Build					
Existing (2013)	LOS	A	B	C	D	E	F
	A	36	5	0	0	0	0
	B	0	172	26	0	0	0
	C	0	3	284	53	0	1
	D	0	0	7	236	42	2
	E	0	0	0	2	117	35
	F	0	0	1	2	1	187

TABLE 5-119

Freeway LOS Comparison Summary: 2020 TSM/TDM vs. 2020 No Build*SR 710 North Study, Los Angeles County, California*

2020 TSM/TDM							
2020 No Build	LOS	A	B	C	D	E	F
	A	37	3	0	0	0	0
	B	1	182	9	1	1	0
	C	0	3	320	9	0	1
	D	0	0	7	265	6	0
	E	0	0	0	4	144	4
	F	0	0	1	2	9	203

TABLE 5-120

Freeway LOS Comparison Summary: 2020 BRT vs. 2020 No Build*SR 710 North Study, Los Angeles County, California*

2020 BRT							
2020 No Build	LOS	A	B	C	D	E	F
	A	37	3	0	0	0	0
	B	1	183	8	1	1	0
	C	0	3	319	10	0	1
	D	0	0	10	263	5	0
	E	0	0	0	6	142	4
	F	0	0	1	2	10	202

TABLE 5-121

Freeway LOS Comparison Summary: 2025 LRT vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 LRT							
2025 No Build	LOS	A	B	C	D	E	F
	A	37	3	0	0	0	0
	B	1	184	5	1	0	0
	C	0	2	318	10	0	0
	D	0	0	2	278	3	0
	E	0	0	0	7	144	3
	F	0	0	0	2	5	207

TABLE 5-122

Freeway LOS Comparison Summary: 2025 Single Bore (Toll) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Single Bore (Toll)							
2025 No Build	LOS	A	B	C	D	E	F
	A	24	10	2	0	0	0
	B	4	157	20	2	0	0
	C	0	12	290	25	0	0
	D	0	0	9	267	6	0
	E	0	0	0	7	142	5
	F	0	0	0	2	6	206

TABLE 5-123

Freeway LOS Comparison Summary: 2025 Single Bore (Toll-No Trucks) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Single Bore (Toll-No Trucks)							
2025 No Build	LOS	A	B	C	D	E	F
	A	25	9	2	0	0	0
	B	4	155	22	2	0	0
	C	0	10	291	26	0	0
	D	0	0	7	264	11	0
	E	0	0	0	8	140	6
	F	0	0	0	2	13	199

TABLE 5-124

Freeway LOS Comparison Summary: 2025 Single Bore (Toll-Express Bus) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Single Bore (Toll-Express Bus)							
2025 No Build	LOS	A	B	C	D	E	F
	A	25	10	1	0	0	0
	B	5	158	18	2	0	0
	C	0	12	296	19	0	0
	D	0	0	12	263	7	0
	E	0	0	0	9	139	6
	F	0	0	0	1	11	202

TABLE 5-125

Freeway LOS Comparison Summary: 2025 Dual Bore (No Toll) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Dual Bore (No Toll)							
2025 No Build	LOS	A	B	C	D	E	F
	A	25	3	4	1	3	0
	B	14	128	37	2	1	1
	C	0	16	263	48	0	0
	D	0	0	23	246	12	1
	E	0	0	0	19	129	6
	F	0	0	0	3	11	200

TABLE 5-126

Freeway LOS Comparison Summary: 2025 Dual Bore (No Toll-No Trucks) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Dual Bore (No Toll-No Trucks)							
2025 No Build	LOS	A	B	C	D	E	F
	A	25	3	4	1	3	0
	B	13	123	42	3	1	1
	C	0	15	254	57	1	0
	D	0	0	23	242	14	3
	E	0	0	0	23	126	5
	F	0	0	0	2	18	194

TABLE 5-127

Freeway LOS Comparison Summary: 2025 Dual Bore (Toll) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Dual Bore (Toll)							
2025 No Build	LOS	A	B	C	D	E	F
	A	25	5	2	2	2	0
	B	13	130	36	2	1	1
	C	0	15	267	45	0	0
	D	0	0	19	250	11	2
	E	0	0	0	18	129	7
	F	0	0	0	2	11	201

TABLE 5-128

Freeway LOS Comparison Summary: 2035 TSM/TDM vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 TSM/TDM							
2035 No Build	LOS	A	B	C	D	E	F
	A	34	2	0	0	0	0
	B	2	170	5	1	1	1
	C	0	3	306	8	0	1
	D	0	0	9	274	8	2
	E	0	0	0	2	154	4
	F	0	0	0	0	2	223

TABLE 5-129

Freeway LOS Comparison Summary: 2035 BRT vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 BRT							
2035 No Build	LOS	A	B	C	D	E	F
	A	33	3	0	0	0	0
	B	2	170	5	1	1	1
	C	0	4	305	7	0	2
	D	0	0	10	275	7	1
	E	0	0	0	4	153	3
	F	0	0	0	0	3	222

TABLE 5-130

Freeway LOS Comparison Summary: 2035 LRT vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 LRT							
2035 No Build	LOS	A	B	C	D	E	F
	A	35	1	0	0	0	0
	B	3	171	5	0	0	1
	C	0	1	304	12	1	0
	D	0	0	5	273	15	0
	E	0	0	0	2	147	11
	F	0	0	0	0	2	223

TABLE 5-131

Freeway LOS Comparison Summary: 2035 Single Bore (Toll) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Single Bore (Toll)							
2035 No Build	LOS	A	B	C	D	E	F
	A	22	9	1	0	0	0
	B	8	137	25	1	0	1
	C	0	8	284	22	0	0
	D	0	0	8	275	9	1
	E	0	0	0	7	143	10
	F	0	0	0	0	4	221

TABLE 5-132

Freeway LOS Comparison Summary: 2035 Single Bore (Toll-No Trucks) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Single Bore (Toll-No Trucks)							
2035 No Build	LOS	A	B	C	D	E	F
	A	23	8	1	0	0	0
	B	7	140	23	1	0	1
	C	0	8	278	28	0	0
	D	0	0	7	275	10	1
	E	0	0	0	7	145	8
	F	0	0	0	0	7	218

TABLE 5-133

Freeway LOS Comparison Summary: 2035 Single Bore (Toll-Express Bus) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Single Bore (Toll-Express Bus)							
2035 No Build	LOS	A	B	C	D	E	F
	A	22	9	1	0	0	0
	B	7	143	20	1	0	1
	C	0	9	283	21	1	0
	D	0	0	10	270	12	1
	E	0	0	0	7	143	10
	F	0	0	0	0	6	219

TABLE 5-134

Freeway LOS Comparison Summary: 2035 Dual Bore (No Toll) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Dual Bore (No Toll)							
2035 No Build	LOS	A	B	C	D	E	F
	A	22	3	4	1	2	0
	B	15	117	35	0	4	1
	C	0	16	247	50	0	1
	D	0	0	24	250	16	3
	E	0	0	0	17	129	14
	F	0	0	0	1	14	210

TABLE 5-135

Freeway LOS Comparison Summary: 2035 Dual Bore (No Toll-No Trucks) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Dual Bore (No Toll-No Trucks)							
2035 No Build	LOS	A	B	C	D	E	F
	A	23	2	4	1	2	0
	B	14	118	34	1	4	1
	C	0	17	240	54	1	2
	D	0	0	27	248	16	2
	E	0	0	1	20	127	12
	F	0	0	0	1	14	210

TABLE 5-136

Freeway LOS Comparison Summary: 2035 Dual Bore (Toll) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Dual Bore (Toll)							
2035 No Build	LOS	A	B	C	D	E	F
	A	23	4	2	2	1	0
	B	14	119	34	3	1	1
	C	0	16	248	49	0	1
	D	0	0	22	254	15	2
	E	0	0	1	14	133	12
	F	0	0	0	0	10	215

TABLE 5-137

Freeway Operations LOS Summary (AM and PM Peak Hours)*SR 710 North Study, Los Angeles County, California*

Analysis Year	Alternative/Variation	AM Peak Hour LOS						PM Peak Hour LOS					
		A	B	C	D	E	F	A	B	C	D	E	F
2013	Existing	23	107	165	148	85	78	18	91	176	139	69	113
2020	No Build	22	109	158	142	79	96	18	85	175	136	73	119
	TSM/TDM	21	105	162	142	86	90	17	83	175	139	74	118
	BRT	21	105	163	143	83	91	17	84	175	139	75	116
2025	No Build	22	109	155	143	81	96	18	82	175	140	73	118
	LRT	20	108	155	148	82	93	18	81	170	150	70	117
	Single Bore (Toll)	18	103	148	153	81	95	10	76	173	150	73	116
	Single Bore (Toll-No Trucks)	18	102	148	150	90	90	11	72	174	152	74	115
	Single Bore (Toll-Express Bus)	18	105	148	150	85	92	12	75	179	144	72	116
	Dual Bore (No Toll)	23	84	155	160	83	93	16	63	172	159	73	115
	Dual Bore (No Toll-No Trucks)	23	82	151	164	89	89	15	59	172	164	74	114
	Dual Bore (Toll)	23	84	156	157	83	95	15	66	168	162	71	116
2035	No Build	19	103	148	149	82	105	17	77	170	144	78	120
	TSM/TDM	19	97	150	149	85	106	17	78	170	136	80	125
	BRT	19	98	150	148	87	104	16	79	170	139	77	125
	LRT	20	99	149	142	86	110	18	74	165	145	79	125
	Single Bore (Toll)	19	89	144	157	83	106	11	65	174	148	73	127
	Single Bore (Toll-No Trucks)	18	92	138	160	87	103	12	64	171	151	75	125
	Single Bore (Toll-Express Bus)	18	92	143	153	88	104	11	69	171	146	74	127
	Dual Bore (No Toll)	23	80	143	158	92	102	14	56	167	161	73	127
	Dual Bore (No Toll-No Trucks)	22	81	141	161	89	104	15	56	165	164	75	123
	Dual Bore (Toll)	22	83	139	160	89	105	15	56	168	162	71	126

TABLE 5-138

Intersection LOS Comparison Summary: 2035 No Build vs. Existing (2013)

SR 710 North Study, Los Angeles County, California

		2035 No Build					
Existing (2013)	LOS	A	B	C	D	E	F
	A	12	3	2	1	0	0
	B	0	75	11	0	0	0
	C	0	4	81	24	1	0
	D	0	0	2	47	17	3
	E	0	0	1	1	10	7
	F	0	0	0	0	0	6

TABLE 5-139

Intersection LOS Comparison Summary: 2020 TSM/TDM vs. 2020 No Build*SR 710 North Study, Los Angeles County, California*

2020 TSM/TDM							
	LOS	A	B	C	D	E	F
2020 No Build	A	8	3	3	0	0	0
	B	5	75	7	2	0	1
	C	1	6	84	7	1	2
	D	0	1	11	48	6	3
	E	1	1	0	4	12	2
	F	0	0	0	2	0	10

TABLE 5-140

Intersection LOS Comparison Summary: 2020 BRT vs. 2020 No Build*SR 710 North Study, Los Angeles County, California*

2020 BRT							
	LOS	A	B	C	D	E	F
2020 No Build	A	8	3	3	0	0	0
	B	5	75	7	2	0	1
	C	1	4	87	7	1	1
	D	0	2	11	47	6	3
	E	1	1	0	4	12	2
	F	0	0	0	2	1	9

TABLE 5-141

Intersection LOS Comparison Summary: 2025 LRT vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 LRT							
	LOS	A	B	C	D	E	F
2025 No Build	A	7	3	2	1	0	0
	B	4	73	6	2	0	1
	C	2	2	89	6	1	1
	D	0	3	11	50	6	1
	E	1	1	0	3	15	2
	F	0	0	0	1	1	11

TABLE 5-142

Intersection LOS Comparison Summary: 2025 Single Bore (Toll) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Single Bore (Toll)							
2025 No Build	LOS	A	B	C	D	E	F
	A	8	1	2	2	0	0
	B	5	68	10	3	0	0
	C	2	9	80	10	0	0
	D	0	3	14	51	3	0
	E	2	1	1	5	14	0
	F	1	0	1	0	3	9

TABLE 5-143

Intersection LOS Comparison Summary: 2025 Single Bore (Toll-No Trucks) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Single Bore (Toll-No Trucks)							
2025 No Build	LOS	A	B	C	D	E	F
	A	8	1	2	2	0	0
	B	4	69	10	3	0	0
	C	2	8	81	10	0	0
	D	0	3	18	46	4	0
	E	2	1	1	8	11	0
	F	1	0	1	0	4	8

TABLE 5-144

Intersection LOS Comparison Summary: 2025 Single Bore (Toll-Express Bus) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Single Bore (Toll-Express Bus)							
2025 No Build	LOS	A	B	C	D	E	F
	A	7	2	2	2	0	0
	B	4	69	10	3	0	0
	C	2	8	81	10	0	0
	D	0	3	15	50	3	0
	E	2	1	1	5	14	0
	F	1	0	1	0	4	8

TABLE 5-145

Intersection LOS Comparison Summary: 2025 Dual Bore (No Toll) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Dual Bore (No Toll)							
	<i>LOS</i>	A	B	C	D	E	F
2025 No Build	A	8	2	1	2	0	0
	B	6	66	11	3	0	0
	C	2	10	79	8	2	0
	D	0	5	19	42	5	0
	E	2	1	1	8	11	0
	F	1	0	1	2	2	8

TABLE 5-146

Intersection LOS Comparison Summary: 2025 Dual Bore (No Toll-No Trucks) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Dual Bore (No Toll-No Trucks)							
	<i>LOS</i>	A	B	C	D	E	F
2025 No Build	A	8	2	1	2	0	0
	B	6	66	11	3	0	0
	C	2	11	77	7	4	0
	D	0	5	21	41	4	0
	E	2	1	1	11	8	0
	F	1	0	1	2	2	8

TABLE 5-147

Intersection LOS Comparison Summary: 2025 Dual Bore (Toll) vs. 2025 No Build*SR 710 North Study, Los Angeles County, California*

2025 Dual Bore (Toll)							
	<i>LOS</i>	A	B	C	D	E	F
2025 No Build	A	9	1	2	1	0	0
	B	5	67	11	3	0	0
	C	2	11	79	7	2	0
	D	0	5	19	43	4	0
	E	2	1	1	9	10	0
	F	1	0	1	2	2	8

TABLE 5-148

Intersection LOS Comparison Summary: 2035 TSM/TDM vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 TSM/TDM							
2035 No Build	LOS	A	B	C	D	E	F
	A	6	3	3	0	0	0
	B	3	70	6	2	0	1
	C	2	5	80	7	1	2
	D	0	1	10	51	7	3
	E	1	2	0	5	17	3
	F	0	1	0	2	1	11

TABLE 5-149

Intersection LOS Comparison Summary: 2035 BRT vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 BRT							
2035 No Build	LOS	A	B	C	D	E	F
	A	6	3	3	0	0	0
	B	3	67	9	2	0	1
	C	2	5	80	8	1	1
	D	0	2	10	53	4	3
	E	1	2	1	4	17	3
	F	0	1	0	2	2	10

TABLE 5-150

Intersection LOS Comparison Summary: 2035 LRT vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 LRT							
2035 No Build	LOS	A	B	C	D	E	F
	A	7	2	3	0	0	0
	B	4	69	5	2	1	1
	C	2	3	81	8	1	2
	D	0	2	10	50	8	2
	E	1	2	1	4	18	2
	F	0	1	0	2	1	11

TABLE 5-151

Intersection LOS Comparison Summary: 2035 Single Bore (Toll) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Single Bore (Toll)							
2035 No Build	LOS	A	B	C	D	E	F
	A	8	0	3	1	0	0
	B	5	64	10	2	1	0
	C	2	9	81	5	0	0
	D	1	2	12	52	4	2
	E	1	2	0	8	17	0
	F	1	1	2	0	2	10

TABLE 5-152

Intersection LOS Comparison Summary: 2035 Single Bore (Toll-No Trucks) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Single Bore (Toll-No Trucks)							
2035 No Build	LOS	A	B	C	D	E	F
	A	8	0	3	1	0	0
	B	4	67	8	3	0	0
	C	2	8	80	7	0	0
	D	1	2	16	51	2	1
	E	1	2	0	9	16	0
	F	1	1	2	0	2	10

TABLE 5-153

Intersection LOS Comparison Summary: 2035 Single Bore (Toll-Express Bus) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Single Bore (Toll-Express Bus)							
2035 No Build	LOS	A	B	C	D	E	F
	A	8	0	3	1	0	0
	B	4	65	10	3	0	0
	C	2	8	80	7	0	0
	D	1	2	13	54	2	1
	E	1	2	0	10	15	0
	F	1	1	2	0	3	9

TABLE 5-154

Intersection LOS Comparison Summary: 2035 Dual Bore (No Toll) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Dual Bore (No Toll)							
2035 No Build	LOS	A	B	C	D	E	F
	A	8	1	2	1	0	0
	B	5	64	10	2	1	0
	C	2	10	77	5	3	0
	D	1	4	17	46	5	0
	E	1	2	0	12	13	0
	F	1	1	2	0	4	8

TABLE 5-155

Intersection LOS Comparison Summary: 2035 Dual Bore (No Toll-No Trucks) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Dual Bore (No Toll-No Trucks)							
2035 No Build	LOS	A	B	C	D	E	F
	A	8	1	1	2	0	0
	B	5	63	11	2	1	0
	C	2	11	75	7	2	0
	D	1	4	18	46	4	0
	E	1	2	0	15	10	0
	F	1	1	2	1	3	8

TABLE 5-156

Intersection LOS Comparison Summary: 2035 Dual Bore (Toll) vs. 2035 No Build*SR 710 North Study, Los Angeles County, California*

2035 Dual Bore (Toll)							
2035 No Build	LOS	A	B	C	D	E	F
	A	8	1	2	1	0	0
	B	6	63	10	2	1	0
	C	2	10	79	3	3	0
	D	1	4	17	46	5	0
	E	1	2	0	12	13	0
	F	1	1	2	0	4	8

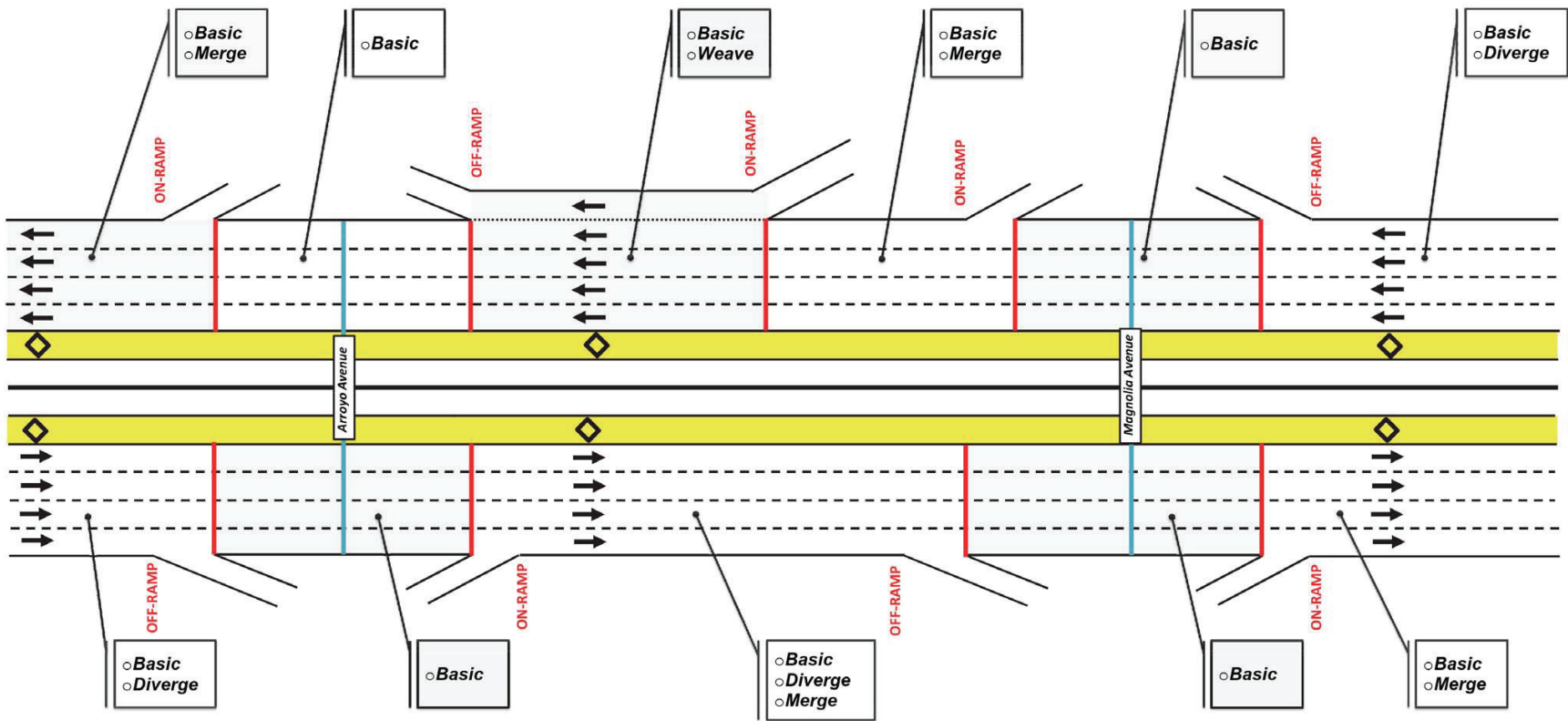


FIGURE 5-1
HCM 2010 Freeway Segmentation Example
 SR 710 North Study
 Los Angeles County, California

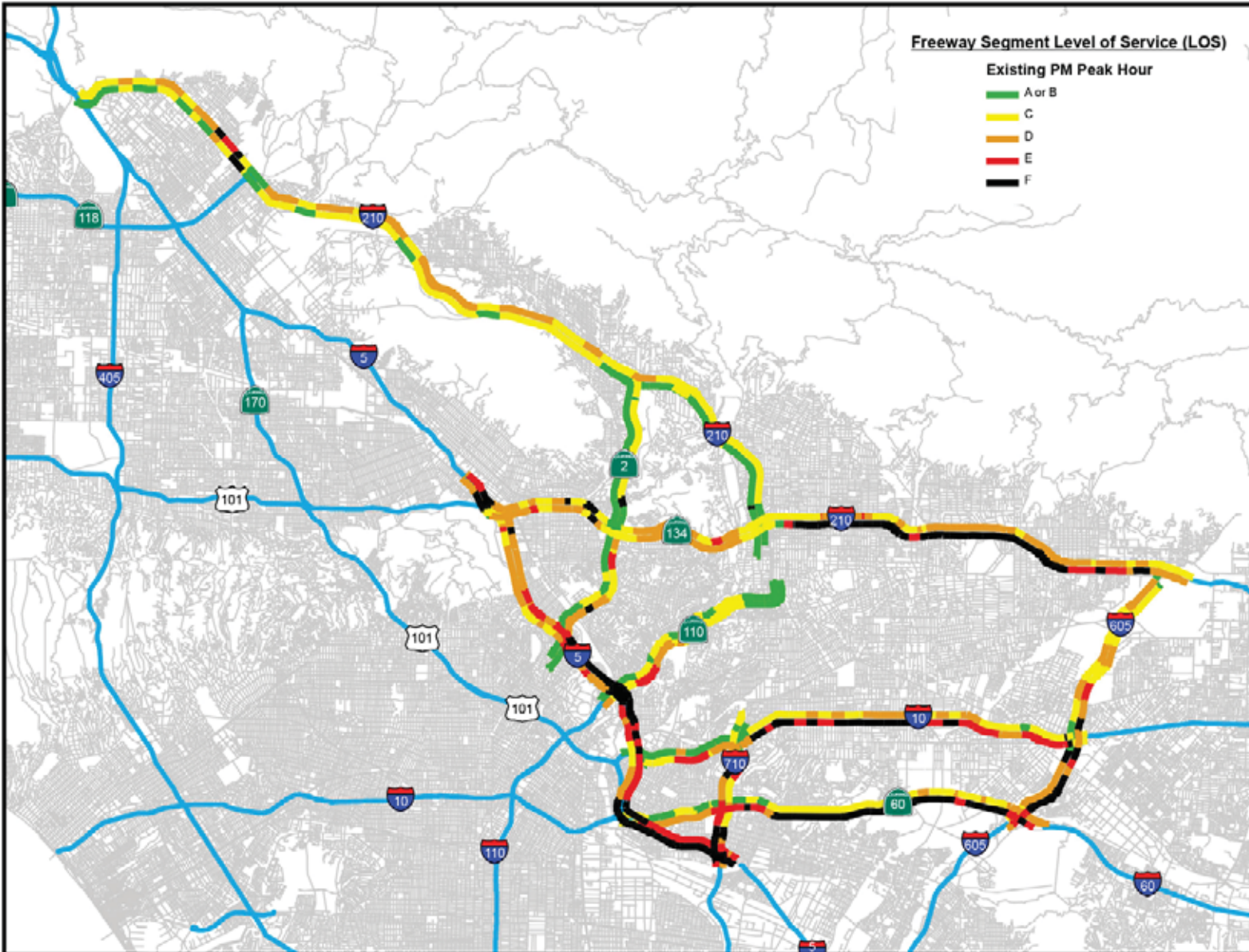


FIGURE 5-3
 Existing Conditions (PM) Freeway LOS
 SR 710 North Study
 Los Angeles County, California

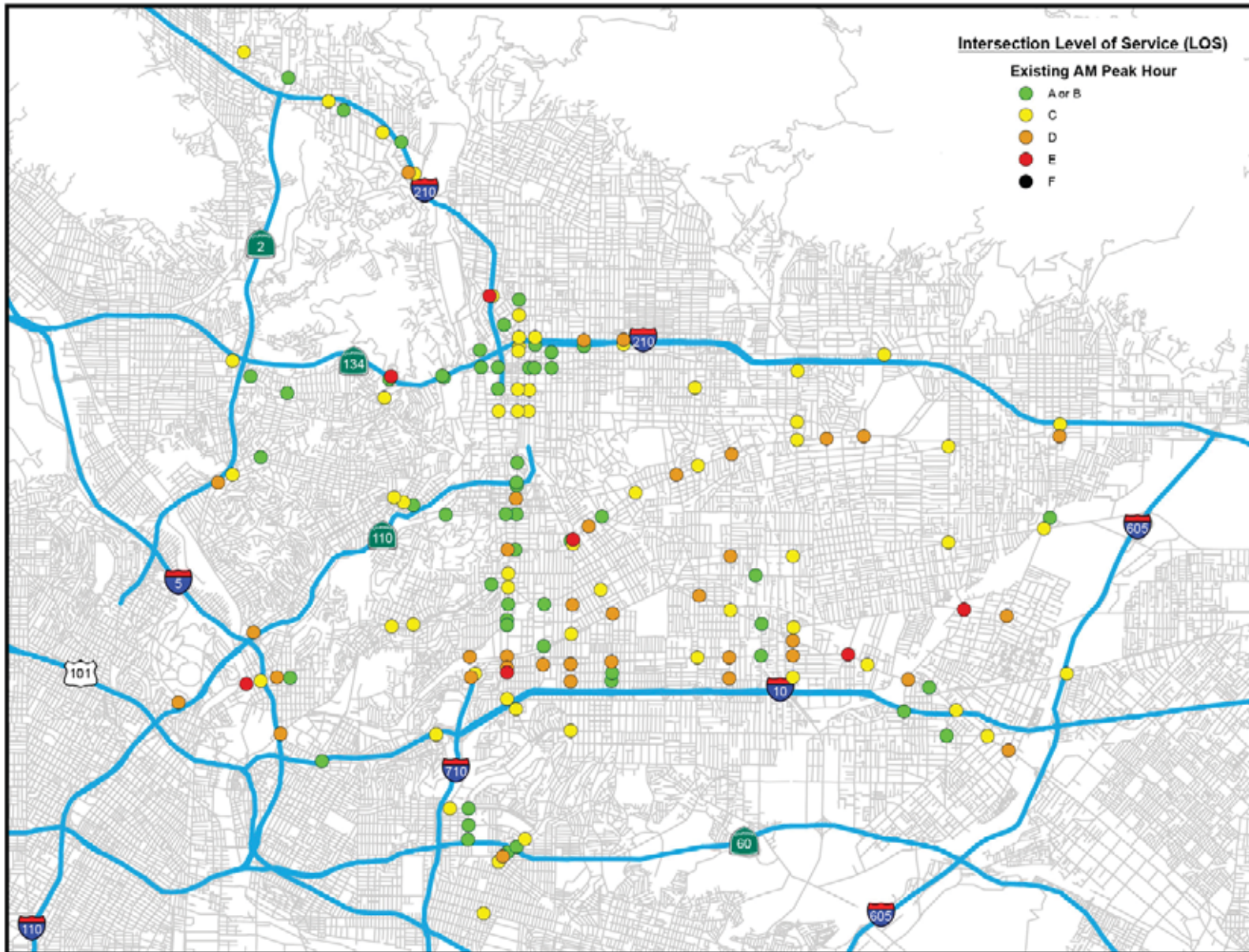


FIGURE 5-4
 Existing Conditions (AM) Intersection LOS
 SR 710 North Study
 Los Angeles County, California

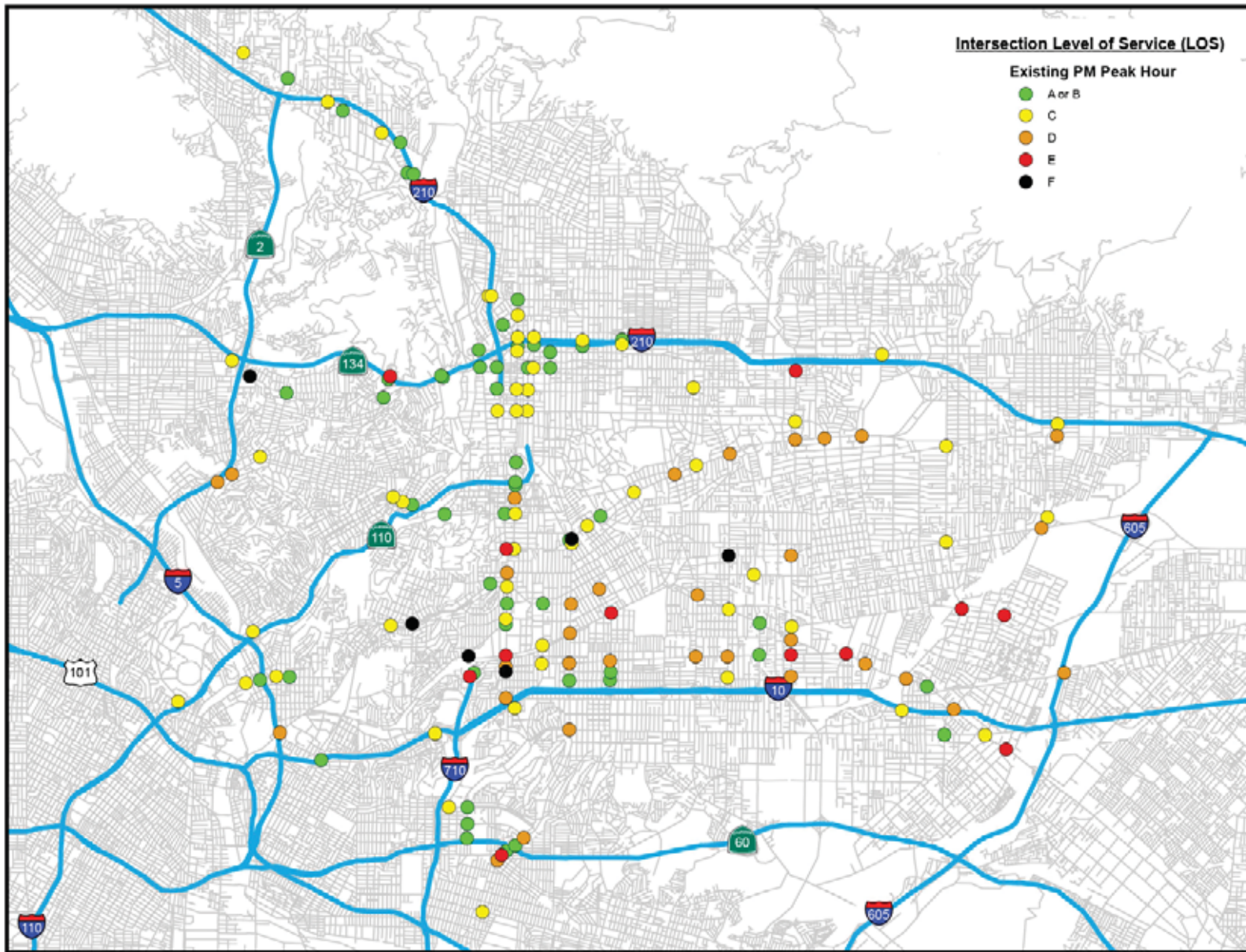


FIGURE 5-5
 Existing Conditions (PM) Intersection LOS
 SR 710 North Study
 Los Angeles County, California

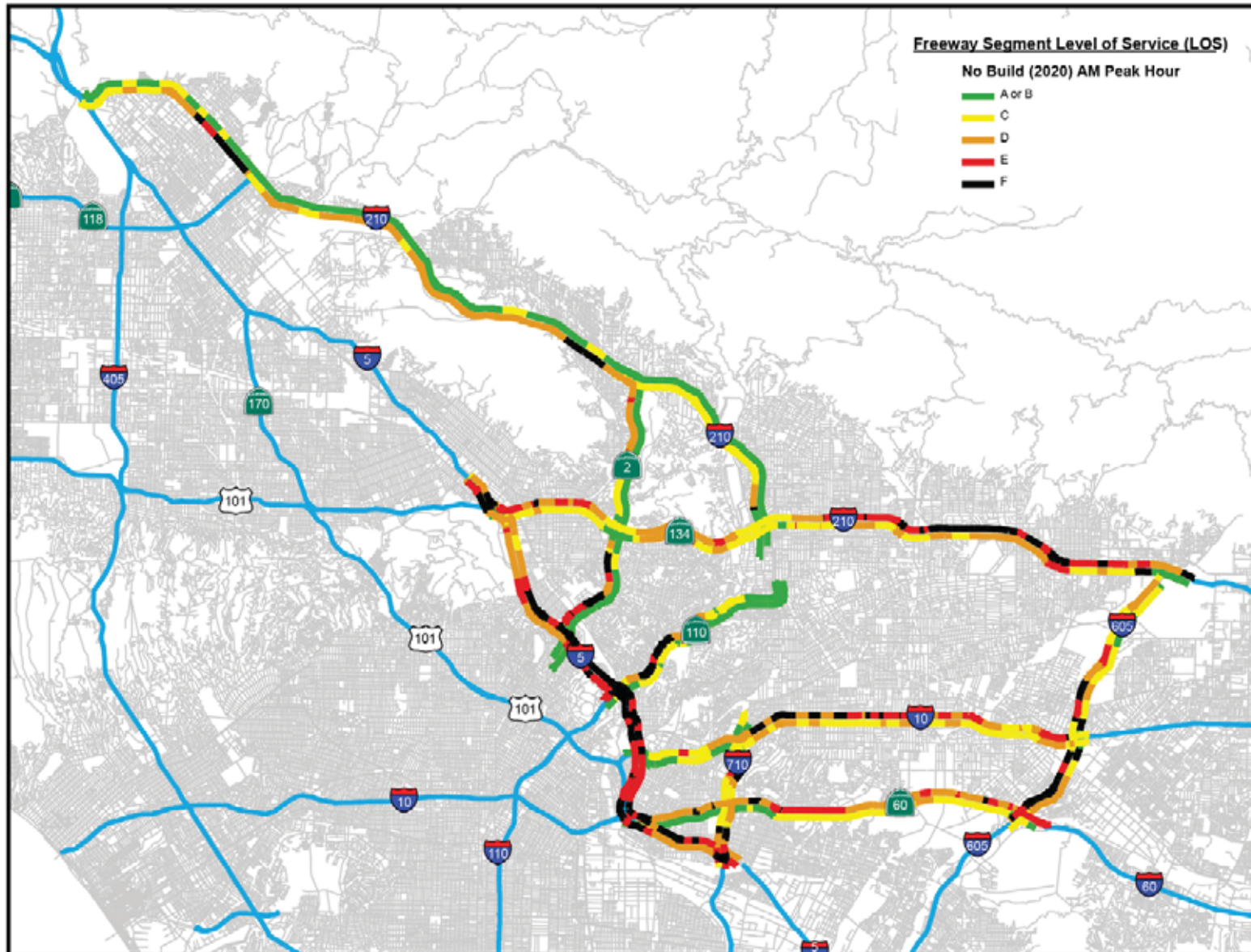


FIGURE 5-6
 Opening Year (2020 AM) Freeway LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

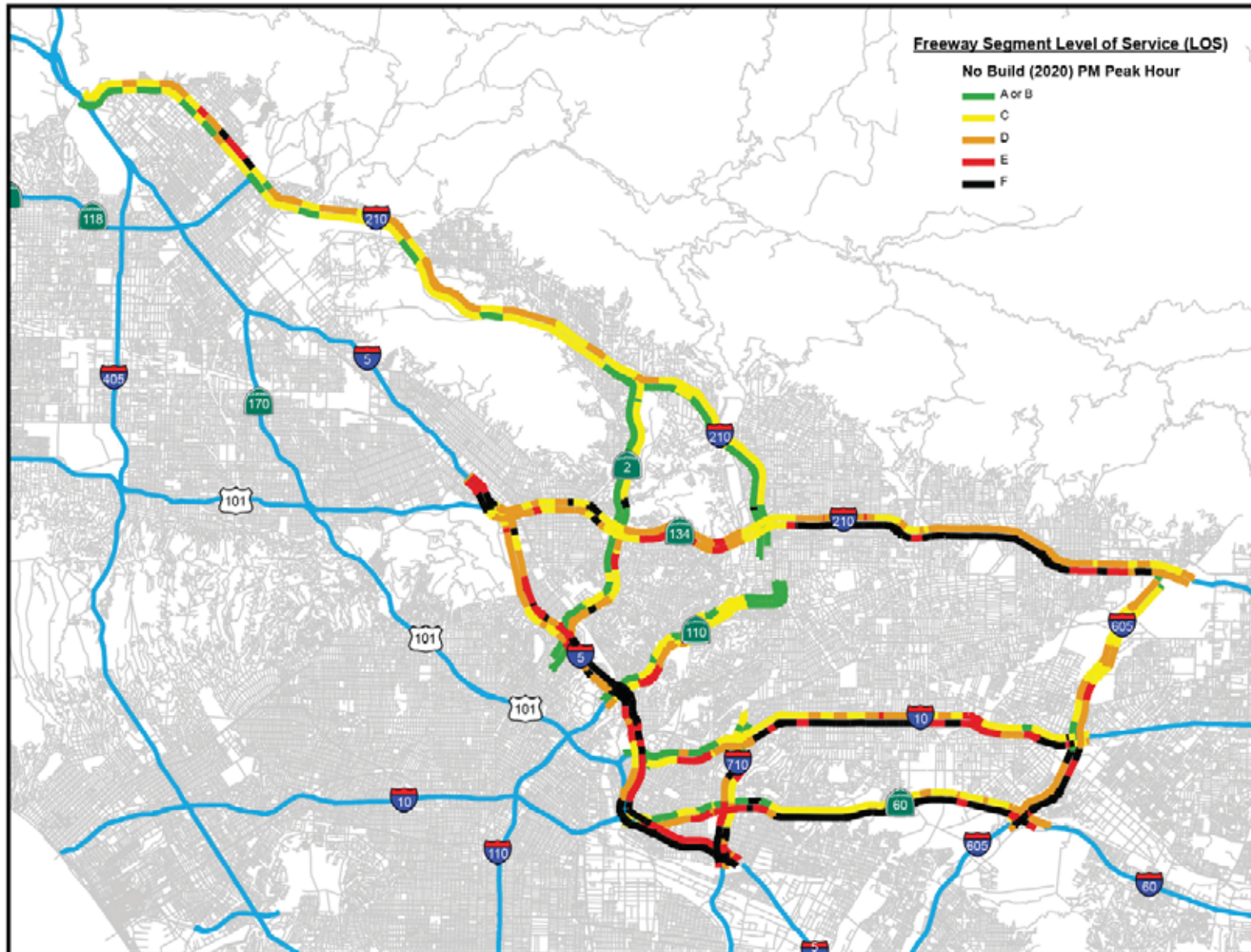


FIGURE 5-7
 Opening Year (2020 PM) Freeway LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

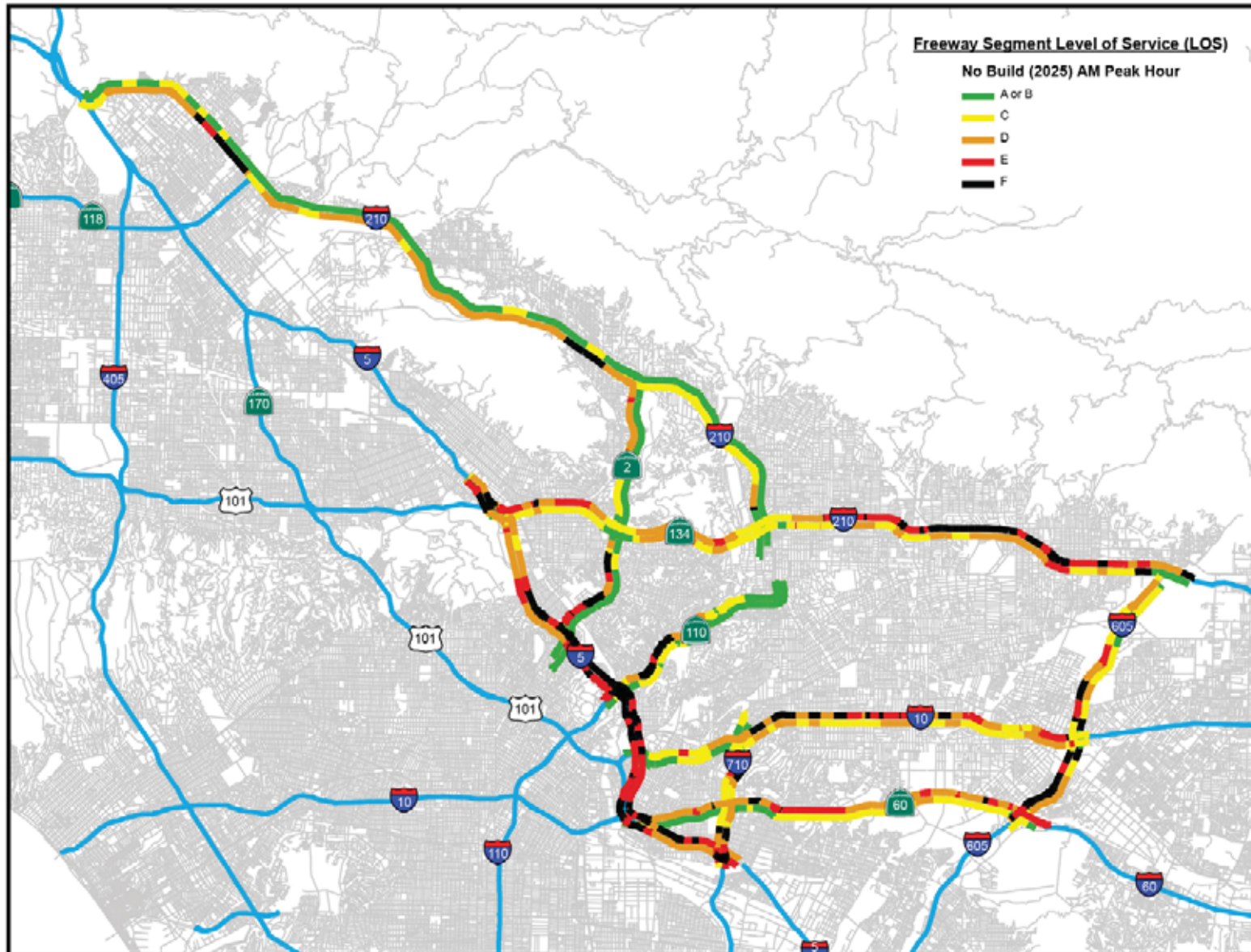


FIGURE 5-8
 Opening Year (2025 AM) Freeway LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

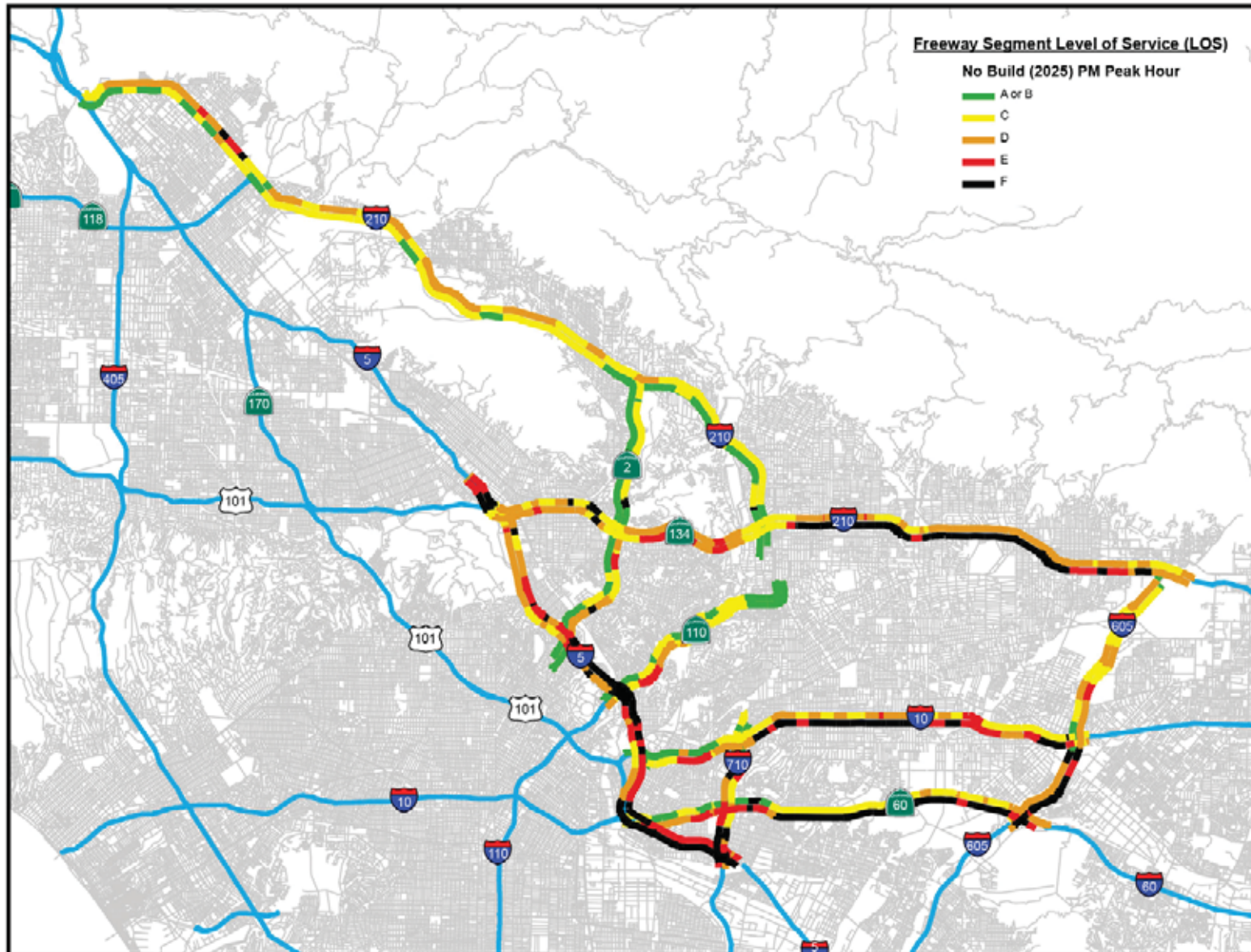


FIGURE 5-9
 Opening Year (2025 PM) Freeway LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

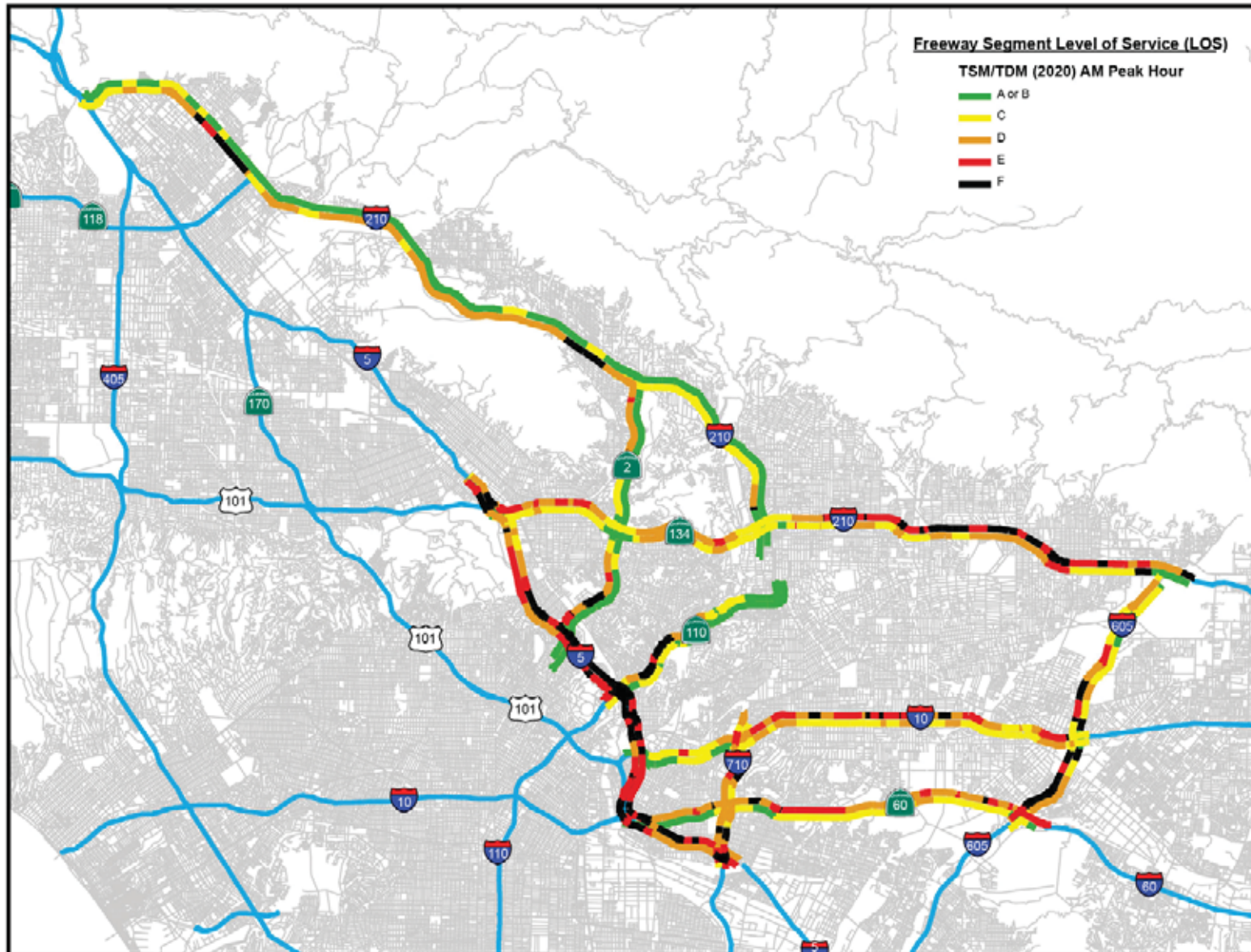


FIGURE 5-10
 Opening Year (2020 AM) Freeway LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

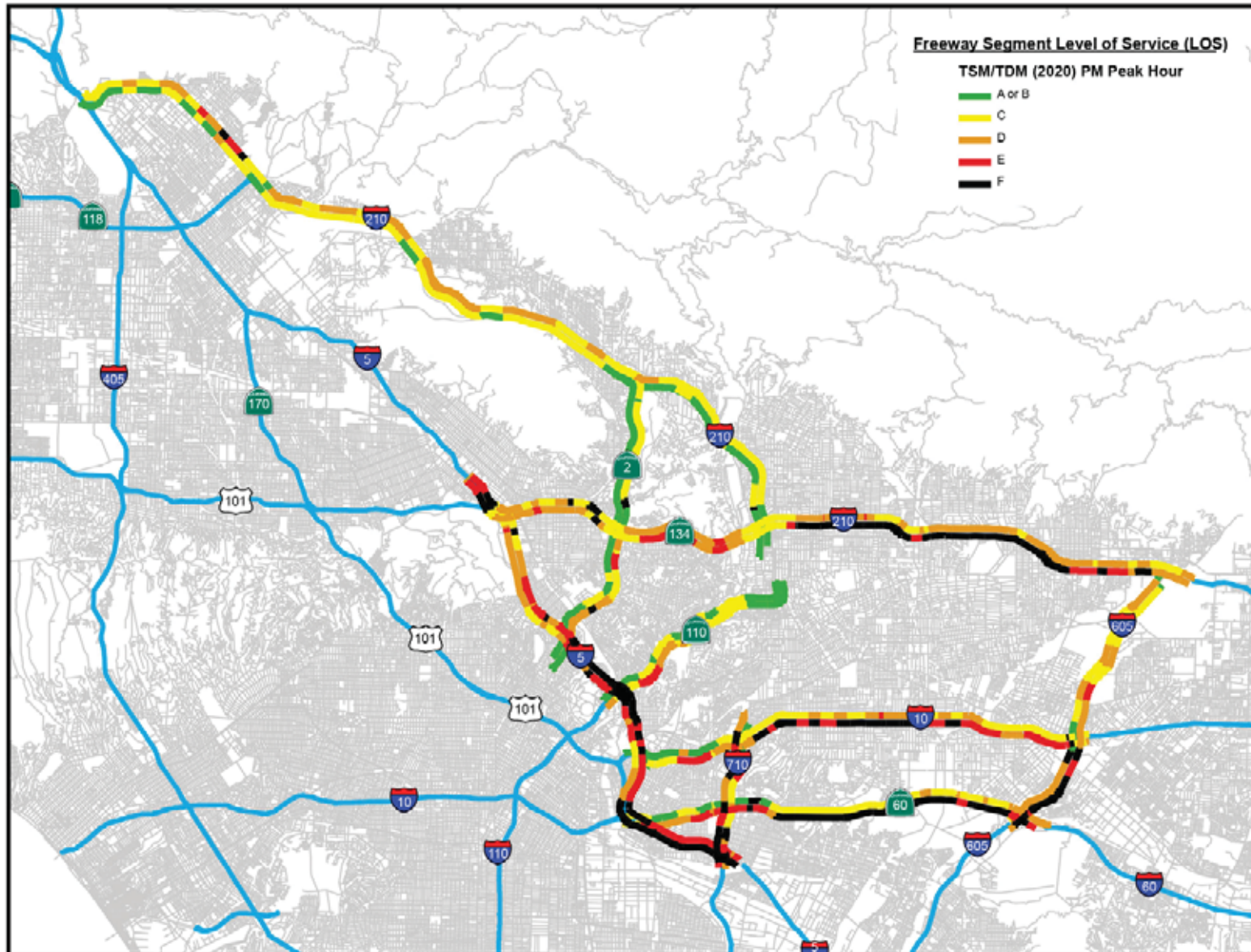


FIGURE 5-11
 Opening Year (2020 PM) Freeway LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

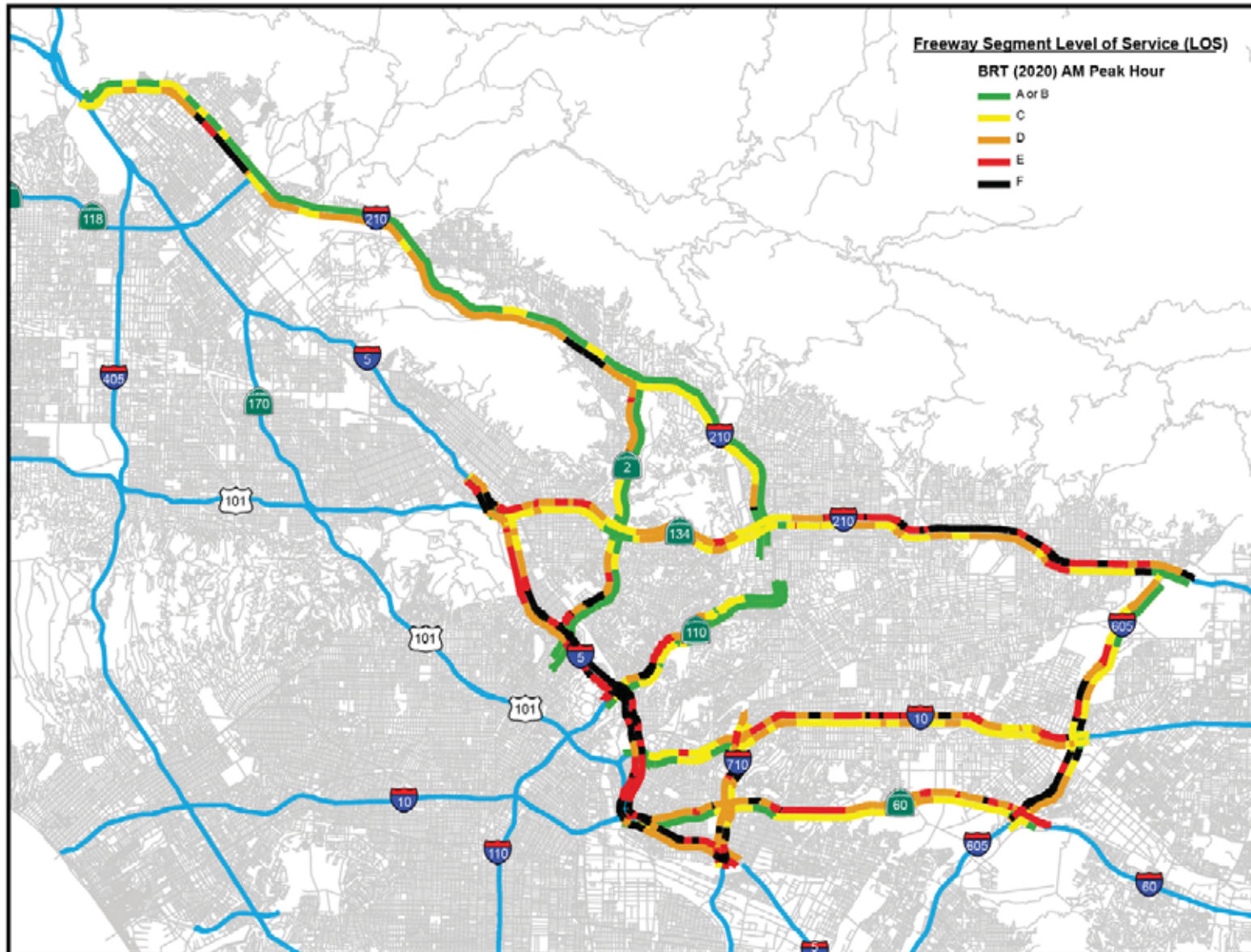


FIGURE 5-12
 Opening Year (2020 AM) Freeway LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

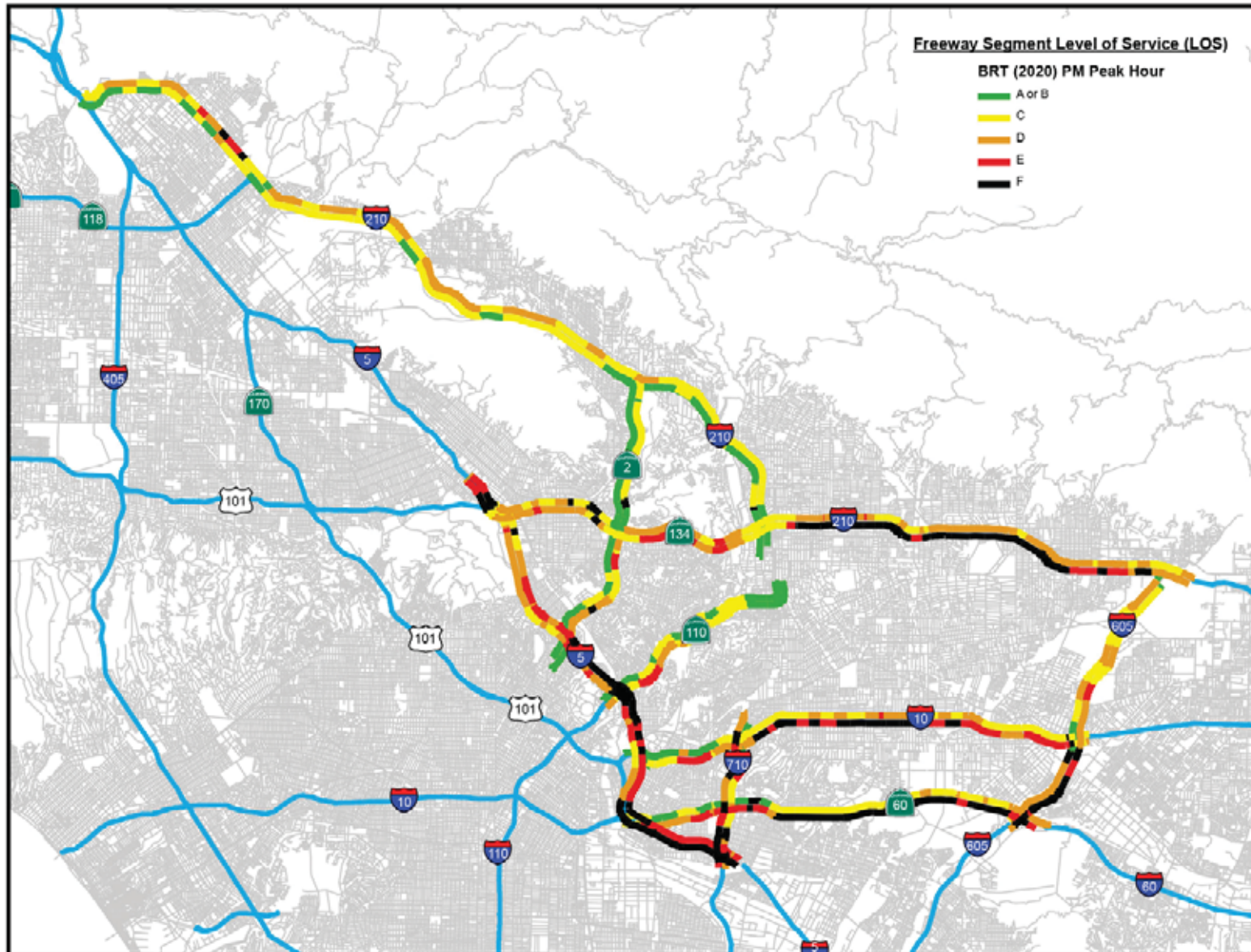


FIGURE 5-13
 Opening Year (2020 PM) Freeway LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

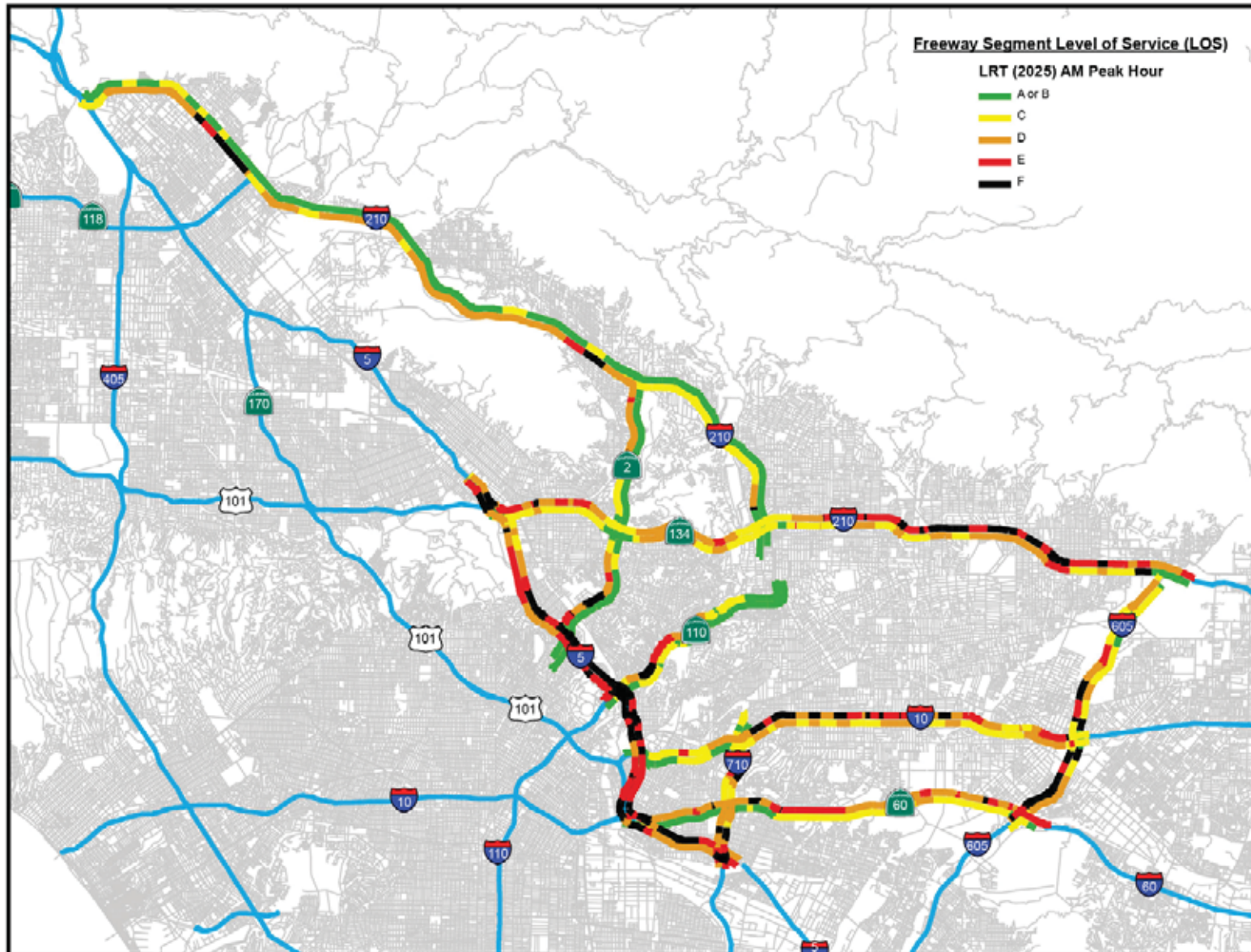


FIGURE 5-14
 Opening Year (2025 AM) Freeway LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

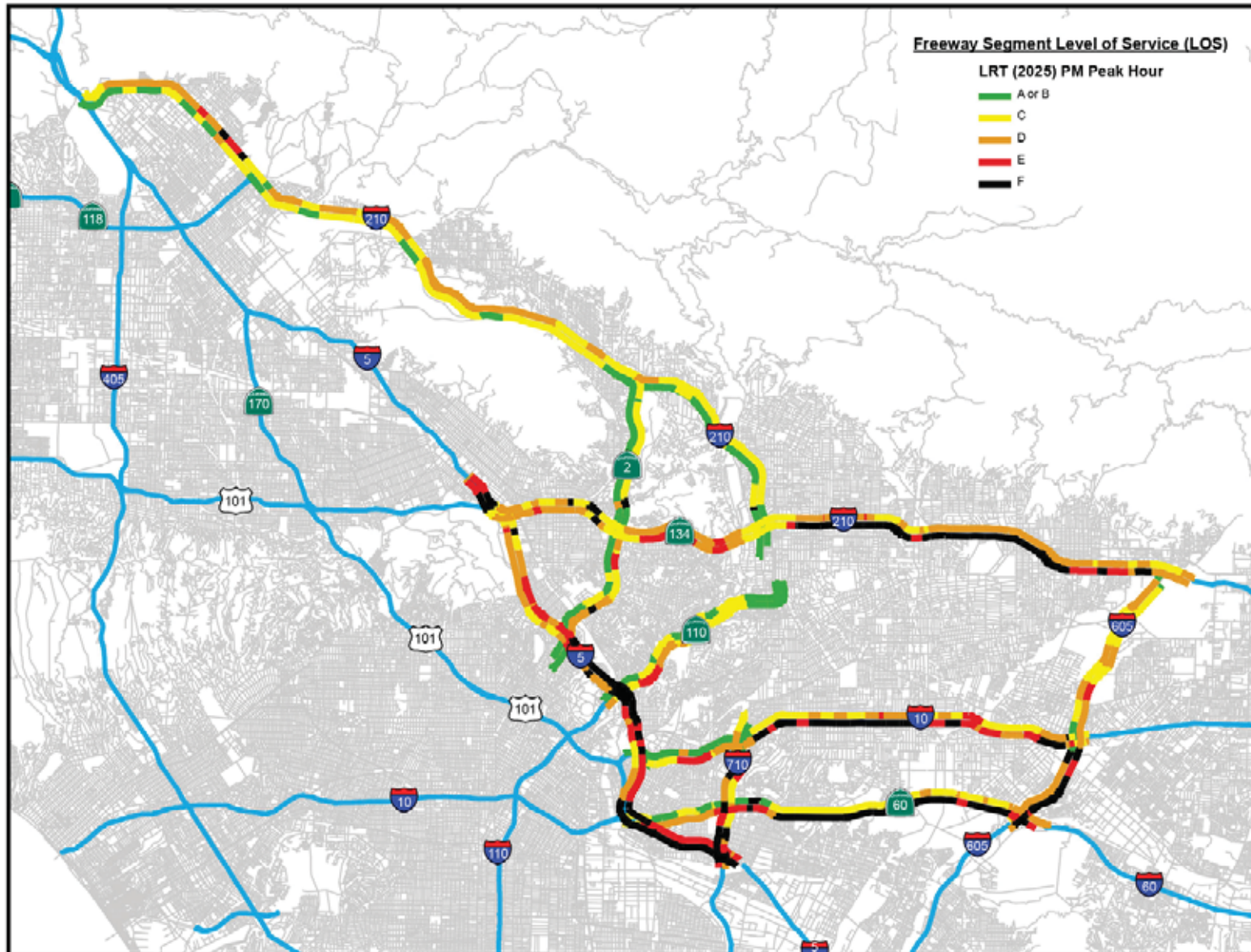


FIGURE 5-15
 Opening Year (2025 PM) Freeway LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

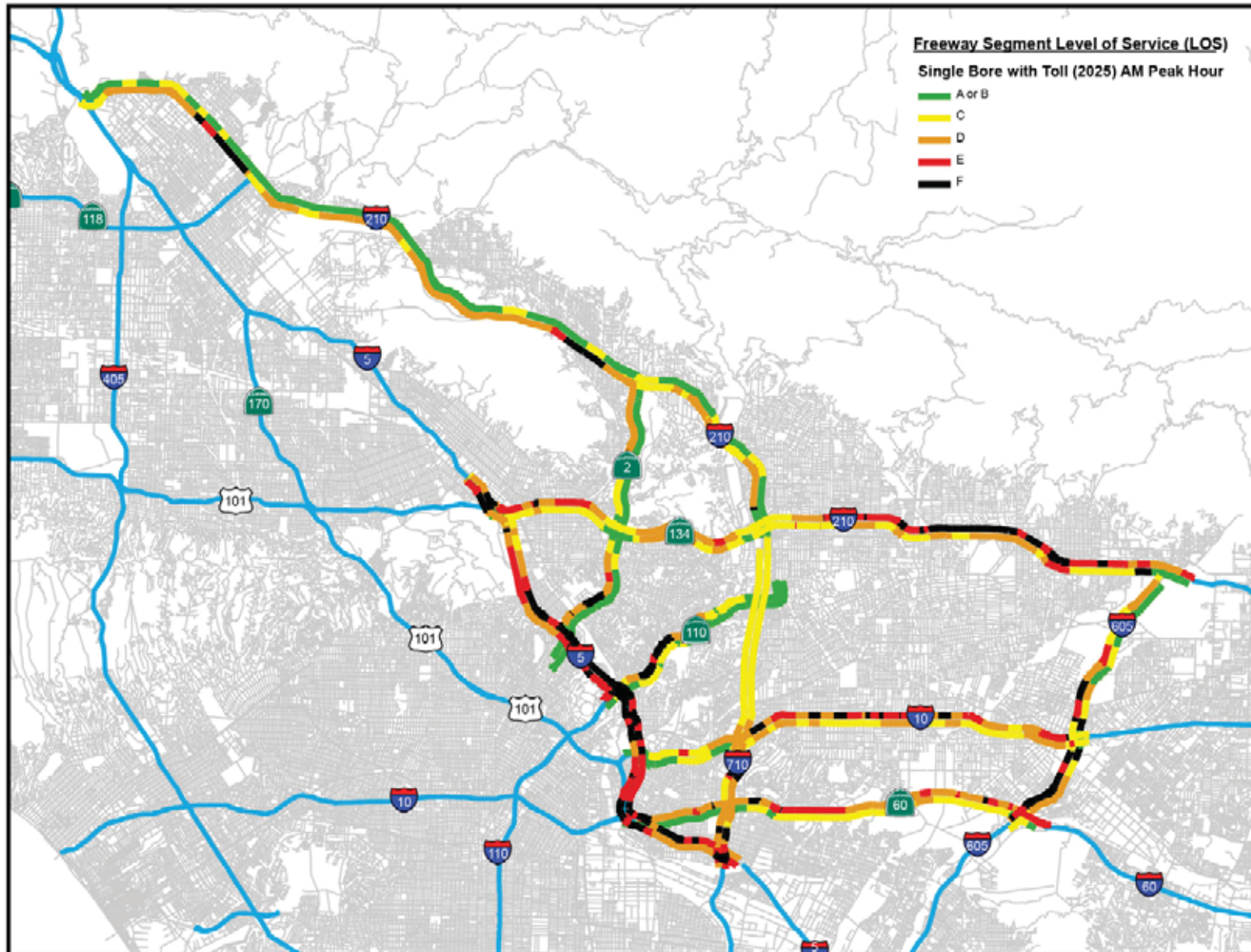


FIGURE 5-16
 Opening Year (2025 AM) Freeway LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

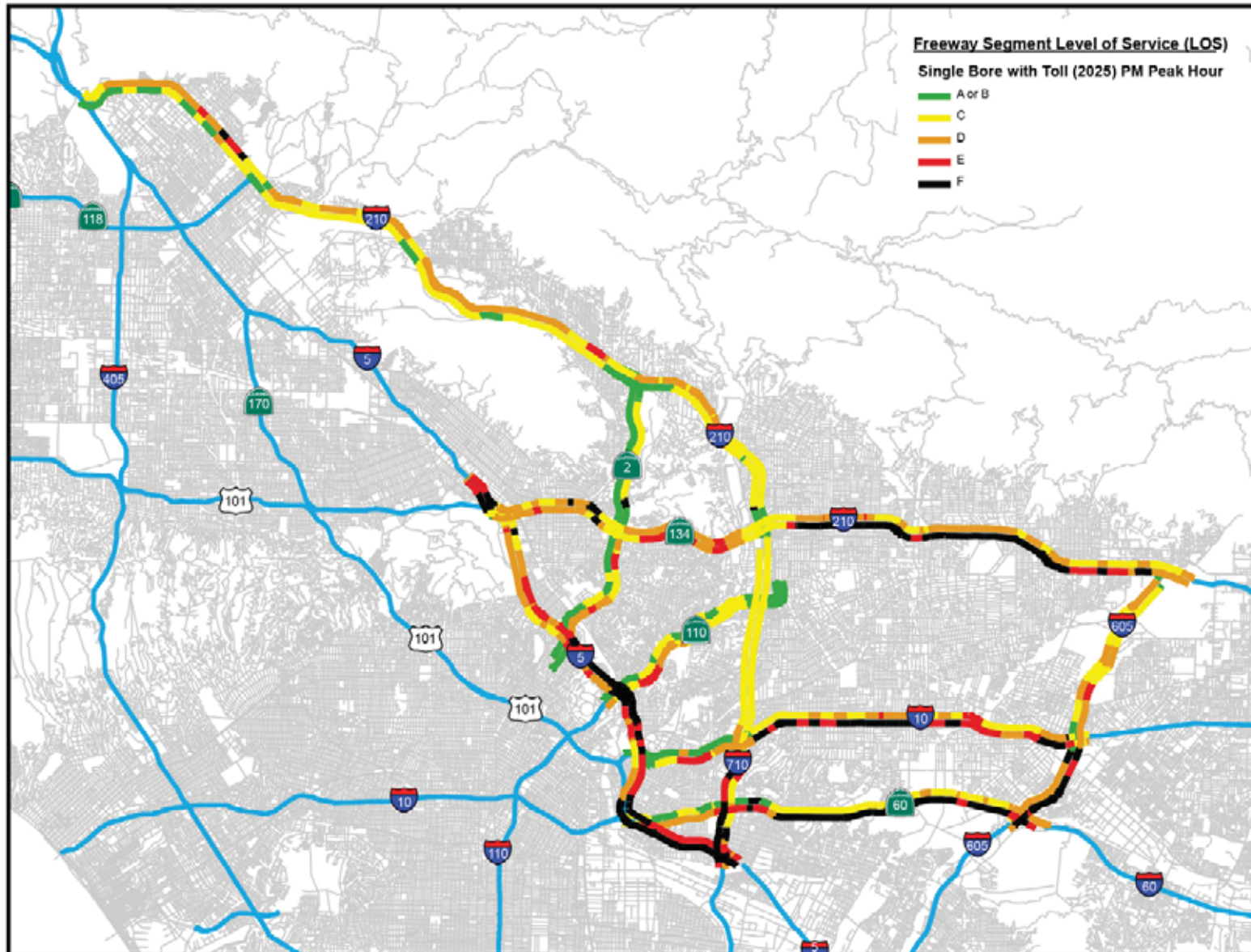


FIGURE 5-17
 Opening Year (2025 PM) Freeway LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

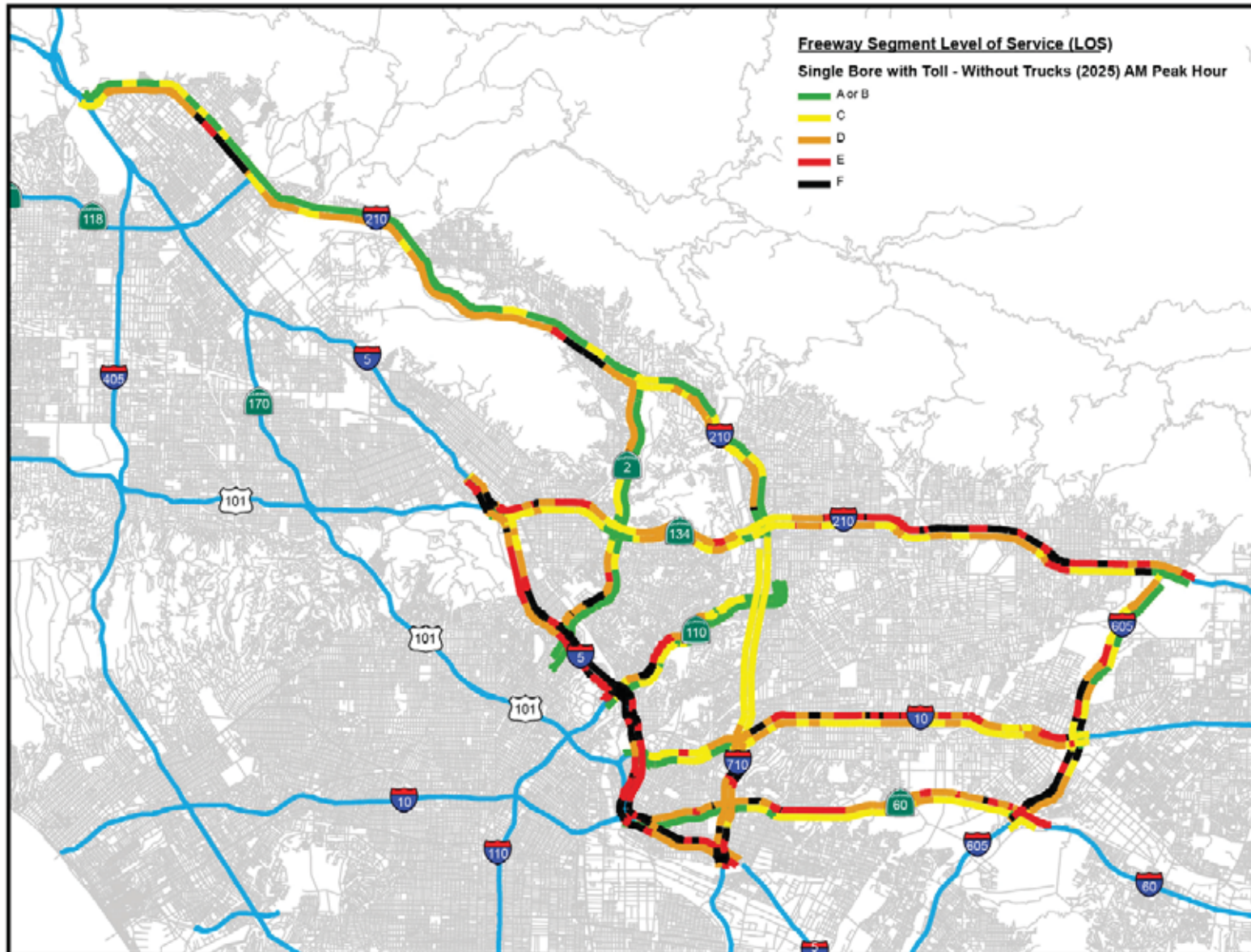


FIGURE 5-18
 Opening Year (2025 AM) Freeway LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

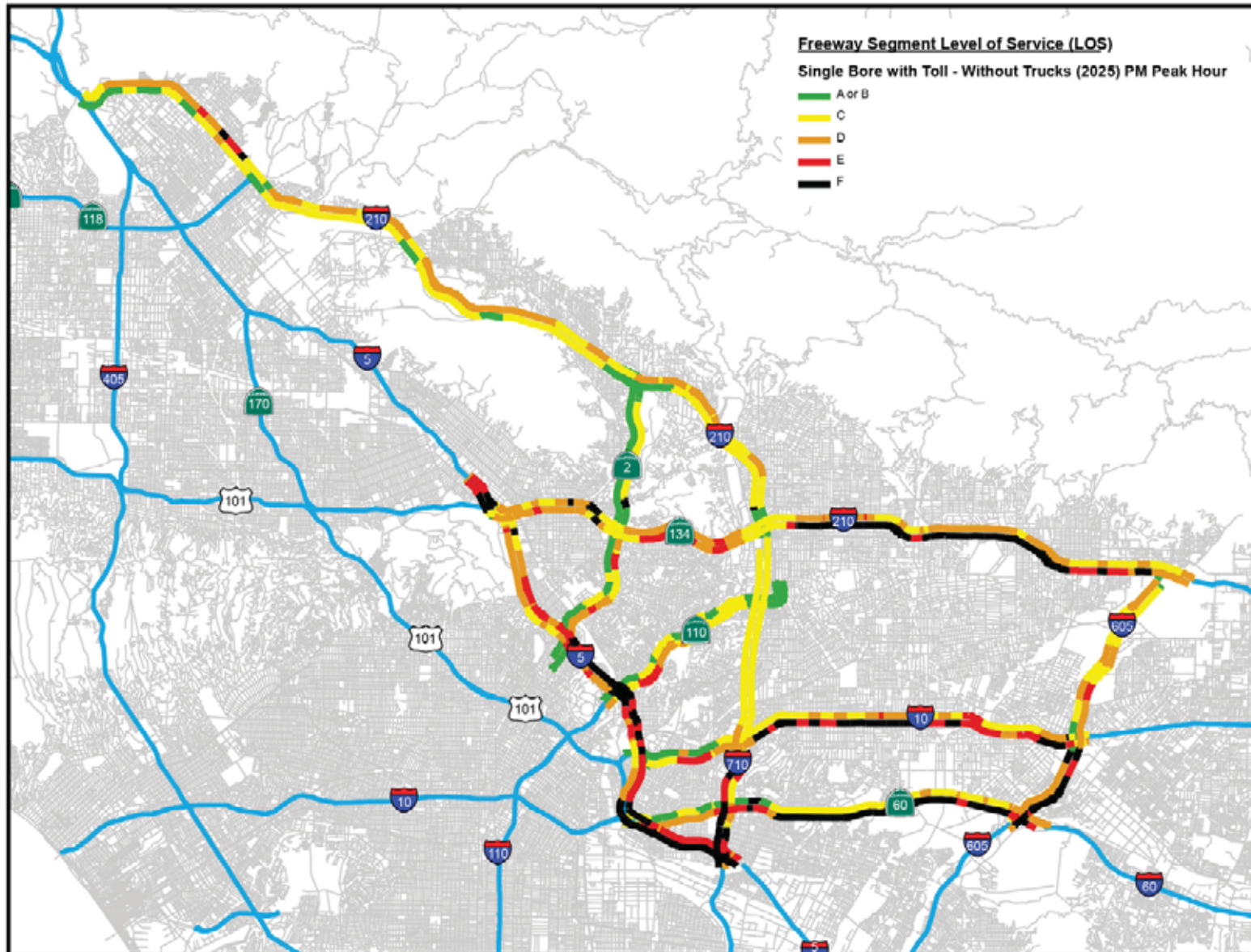


FIGURE 5-19
 Opening Year (2025 PM) Freeway LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

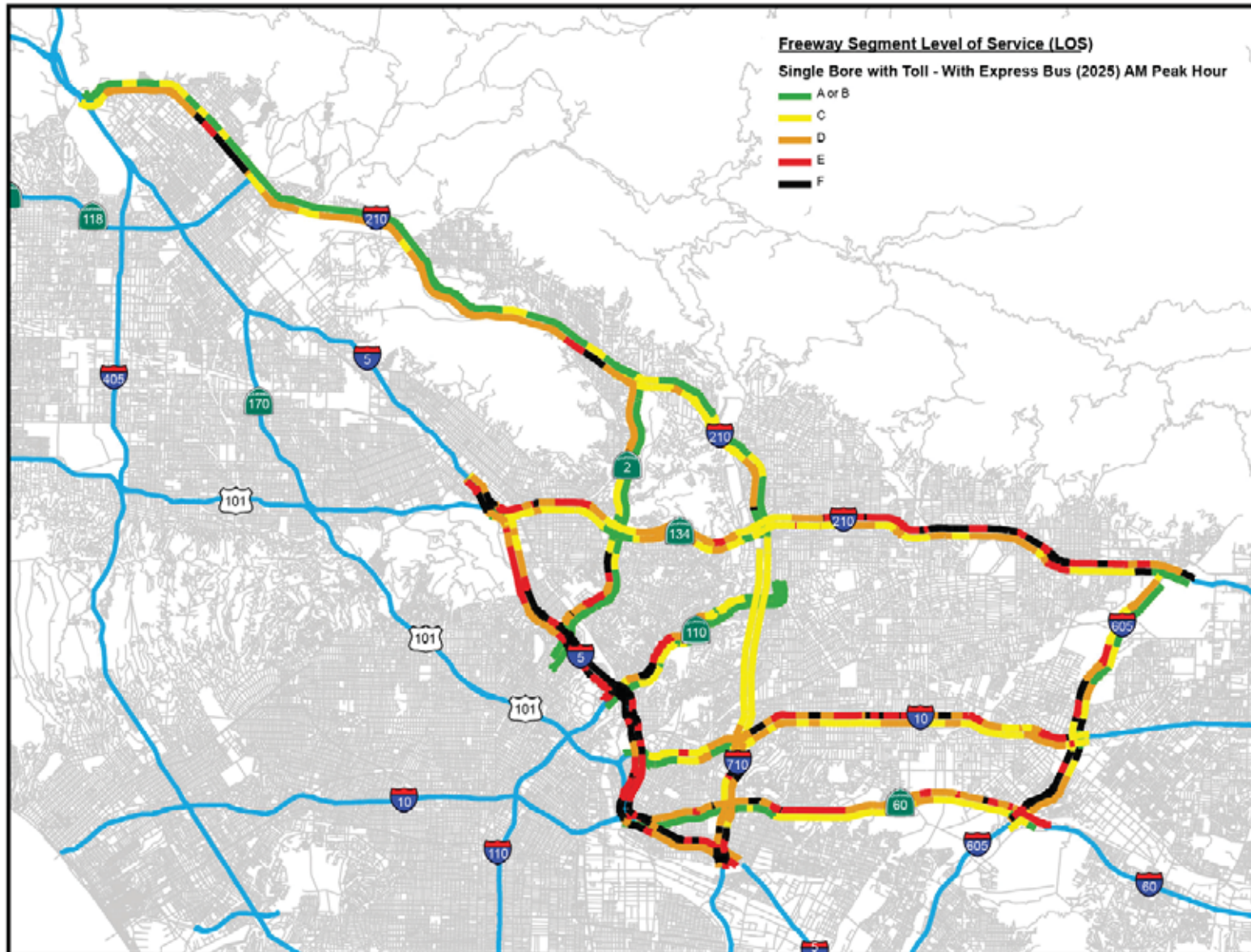


FIGURE 5-20
 Opening Year (2025 AM) Freeway LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

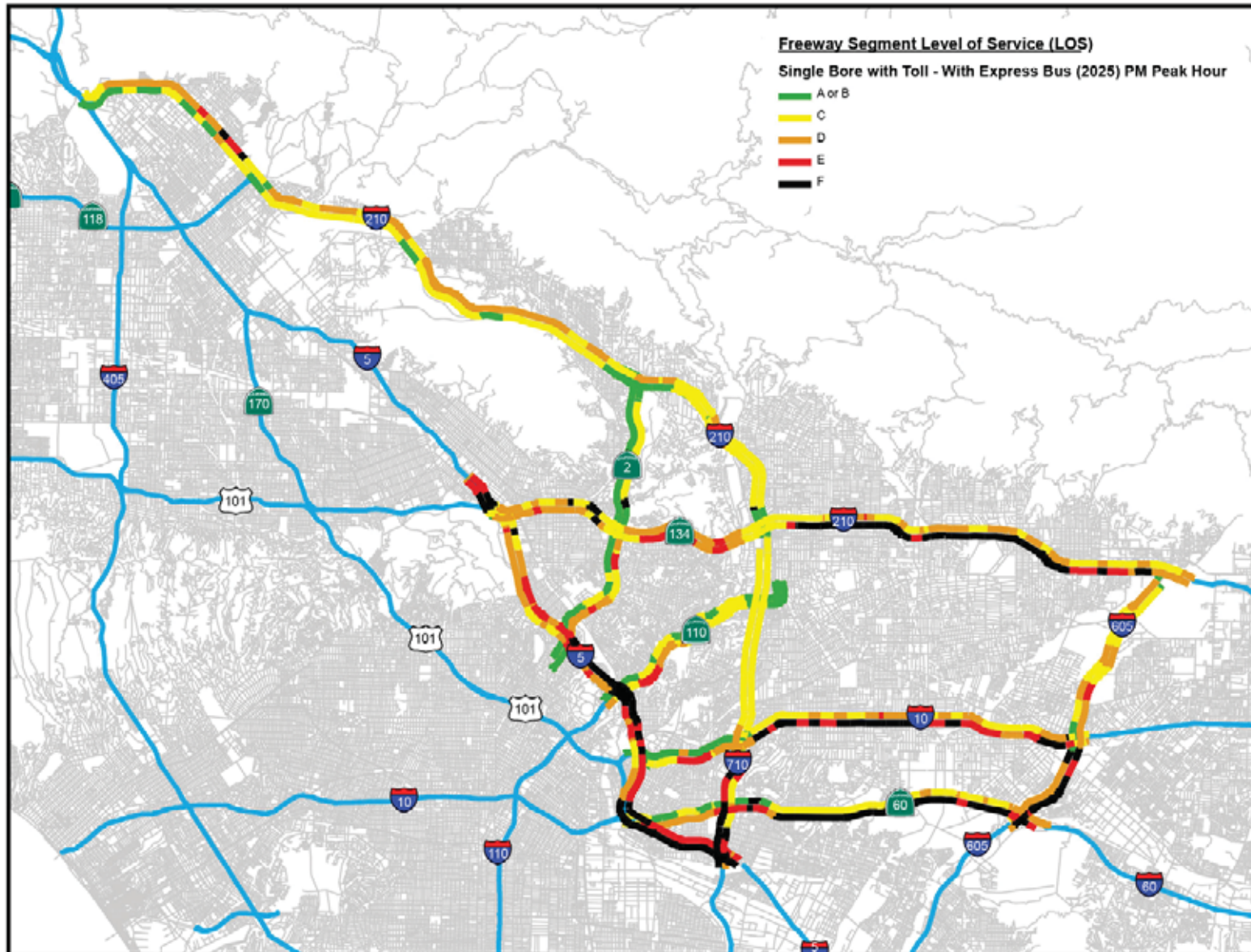


FIGURE 5-21
 Opening Year (2025 PM) Freeway LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

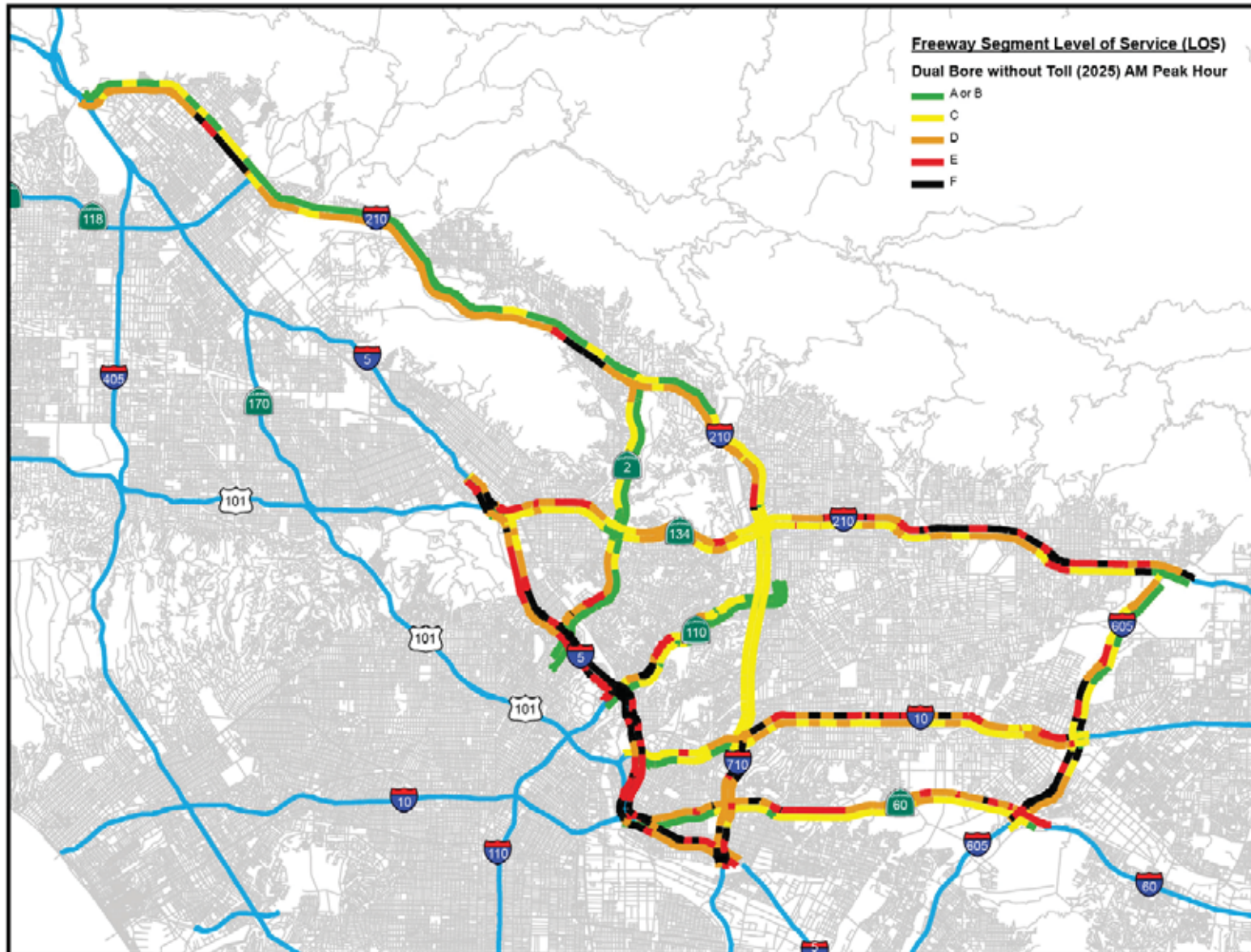


FIGURE 5-22
 Opening Year (2025 AM) Freeway LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

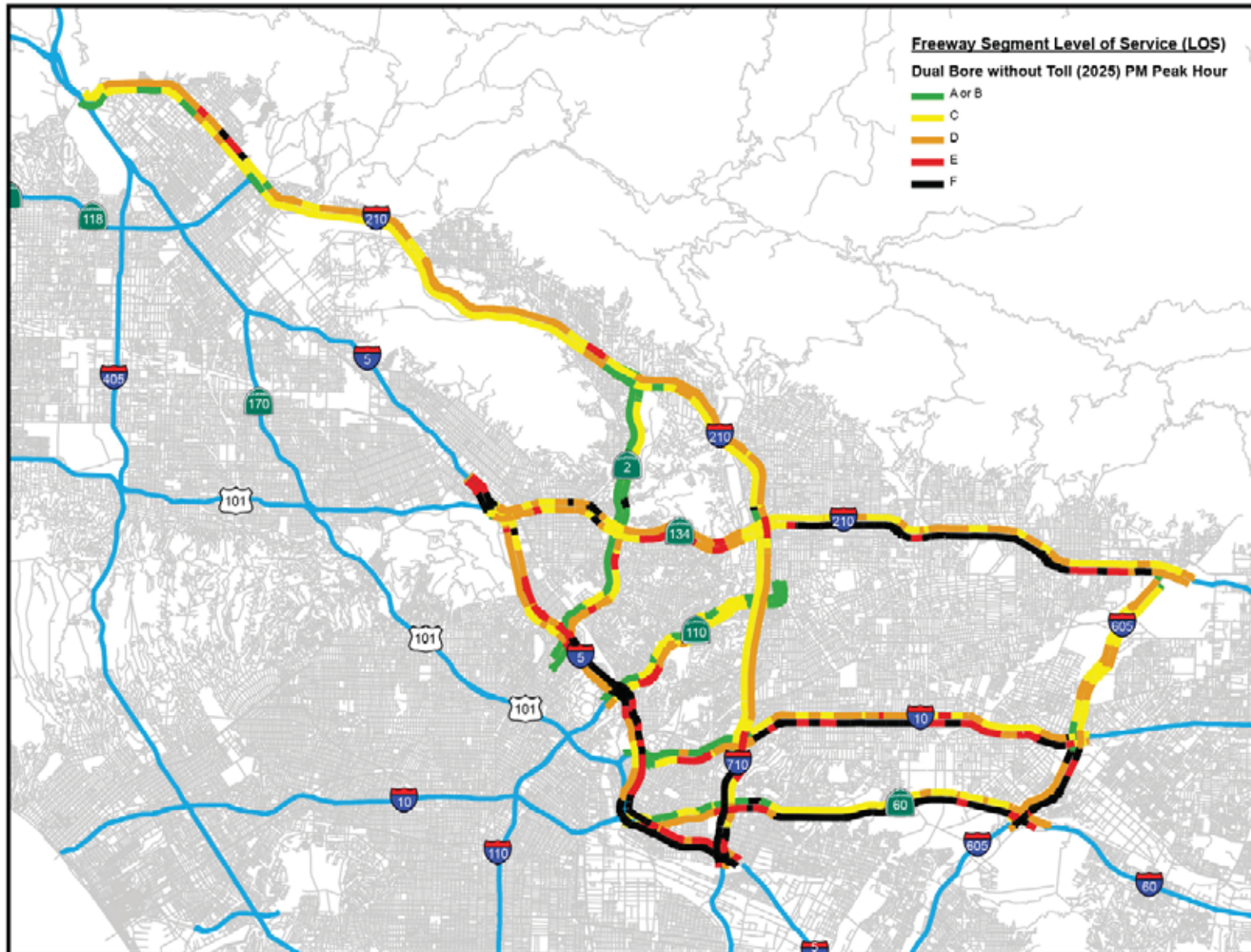


FIGURE 5-23
 Opening Year (2025 PM) Freeway LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

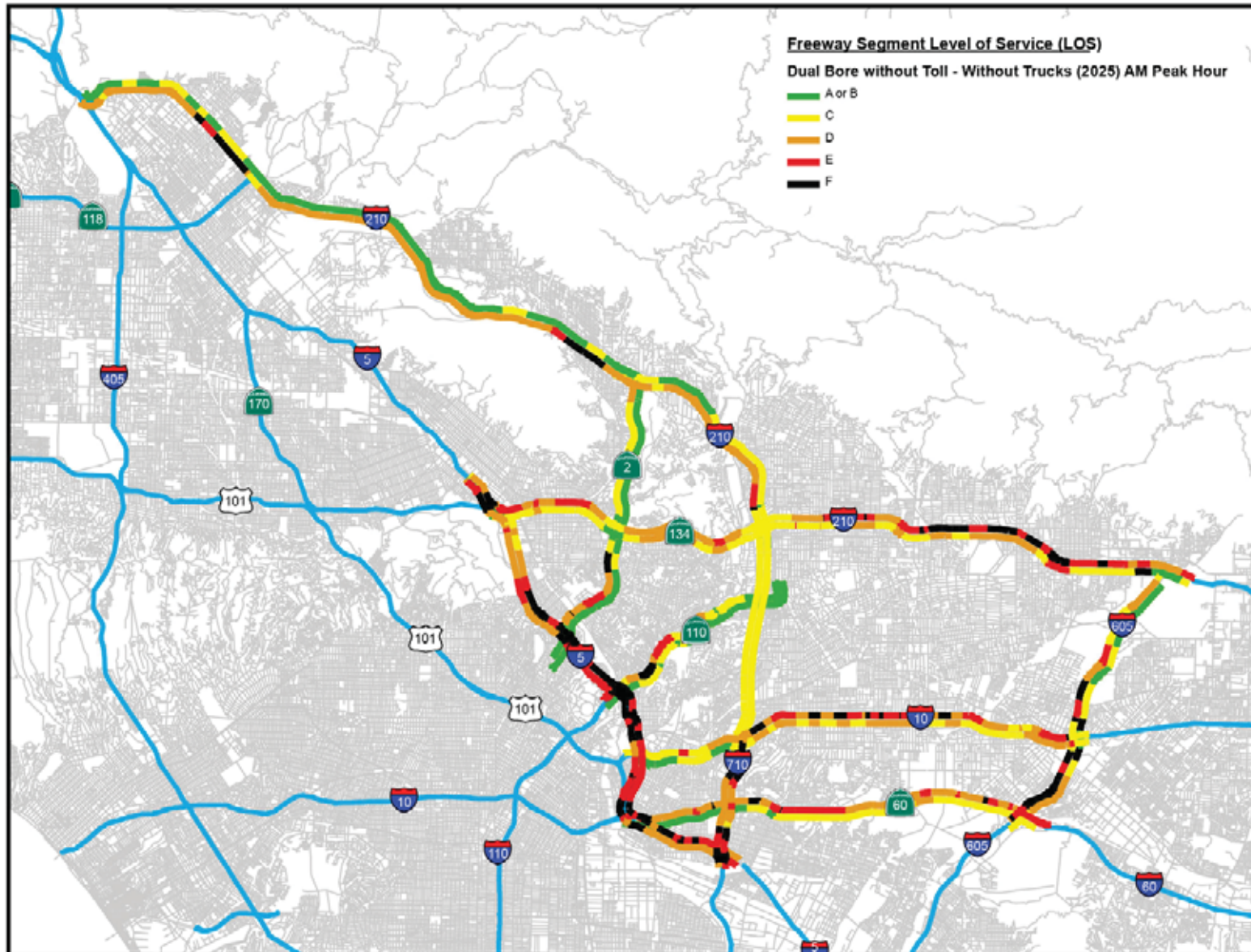


FIGURE 5-24
 Opening Year (2025 AM) Freeway LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

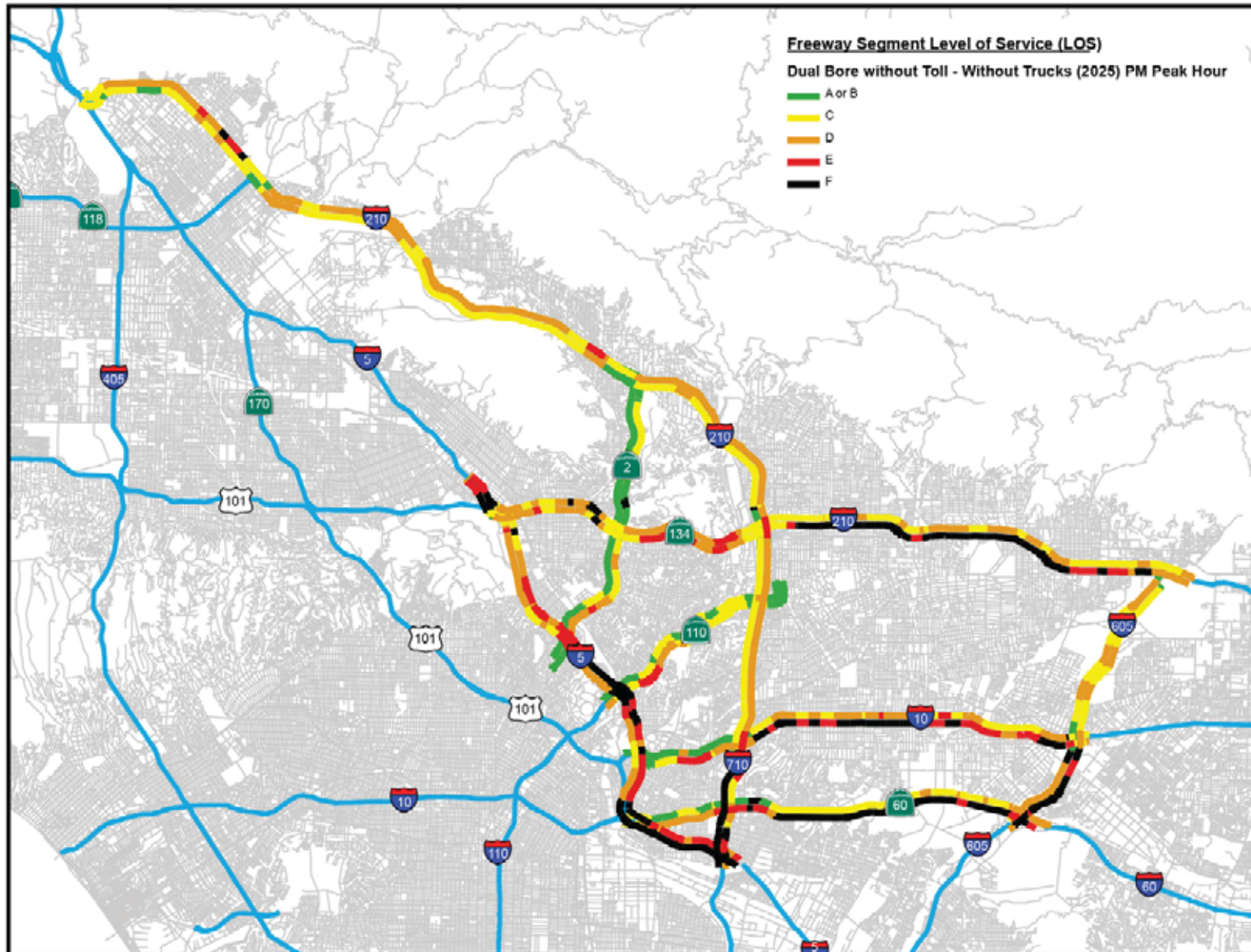


FIGURE 5-25
 Opening Year (2025 PM) Freeway LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

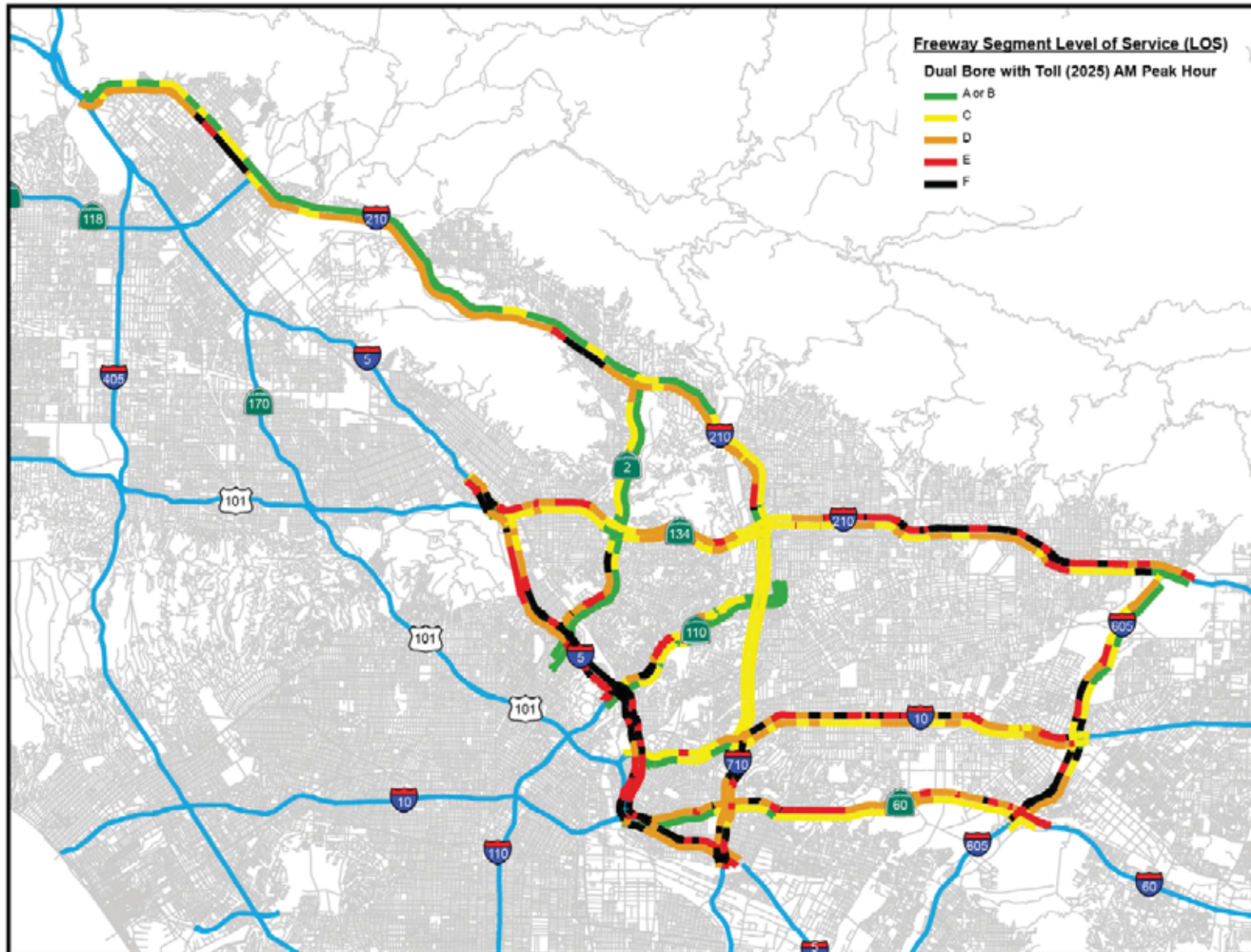


FIGURE 5-26
 Opening Year (2025 AM) Freeway LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

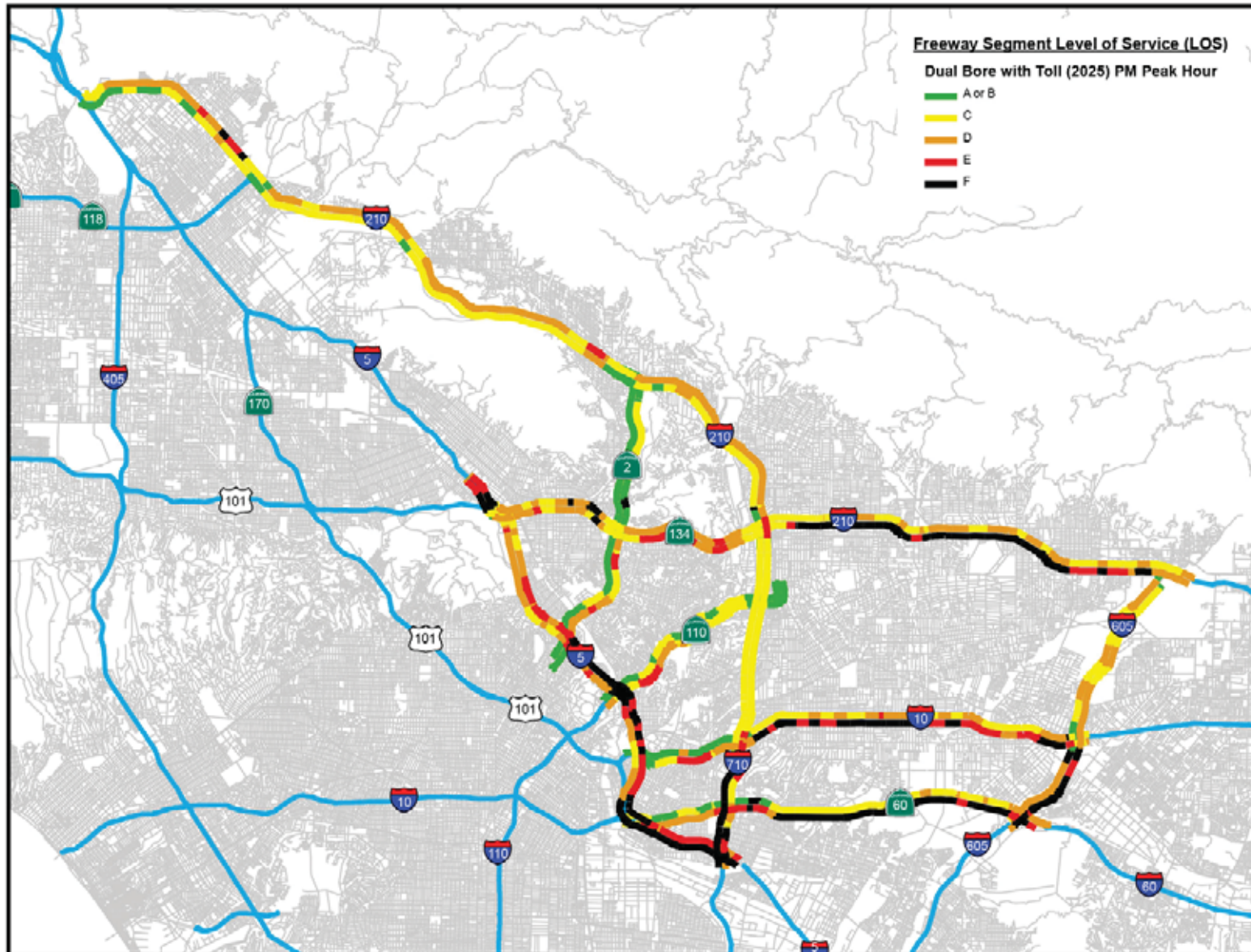


FIGURE 5-27
 Opening Year (2025 PM) Freeway LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

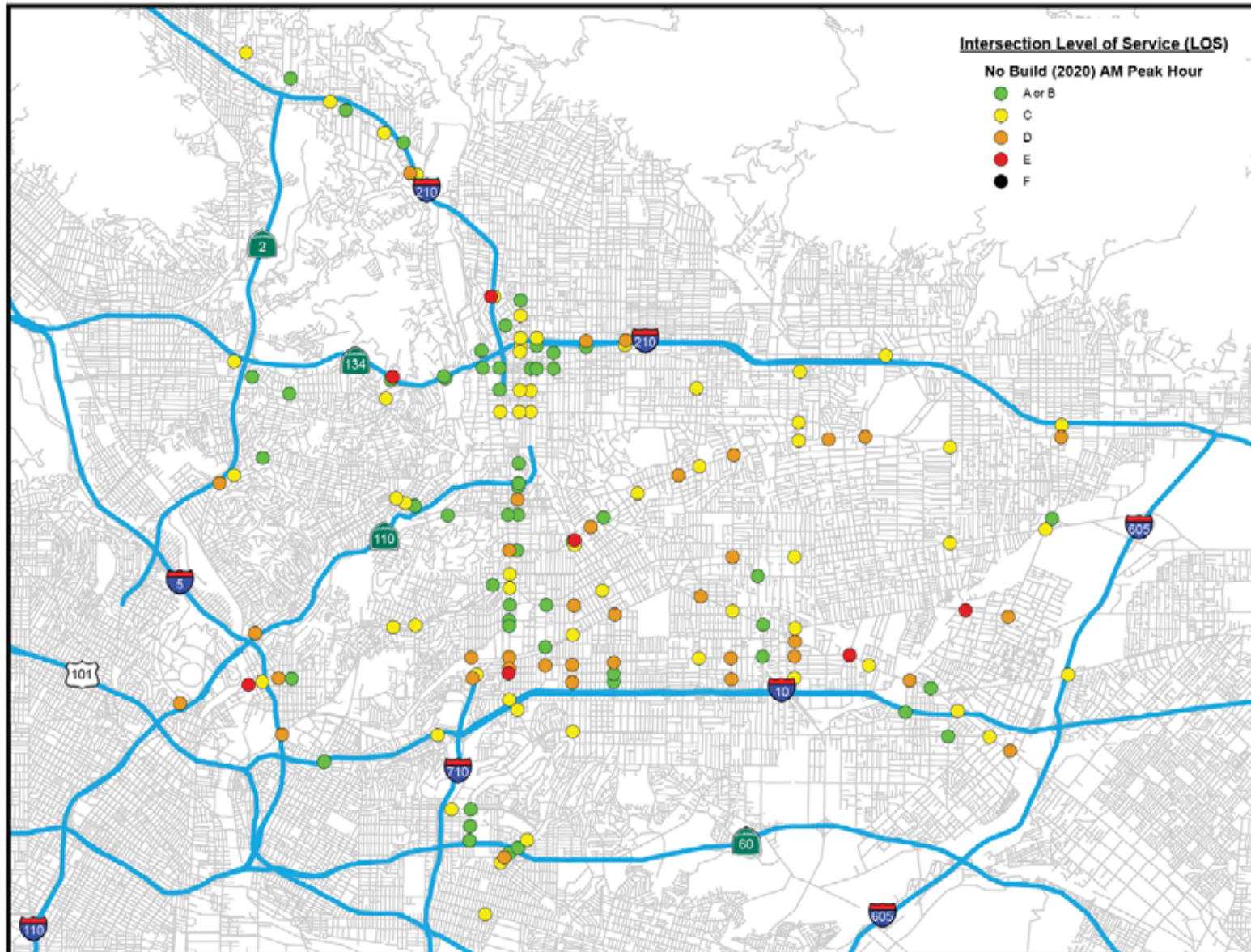


FIGURE 5-28
 Opening Year (2020 AM) Intersection LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

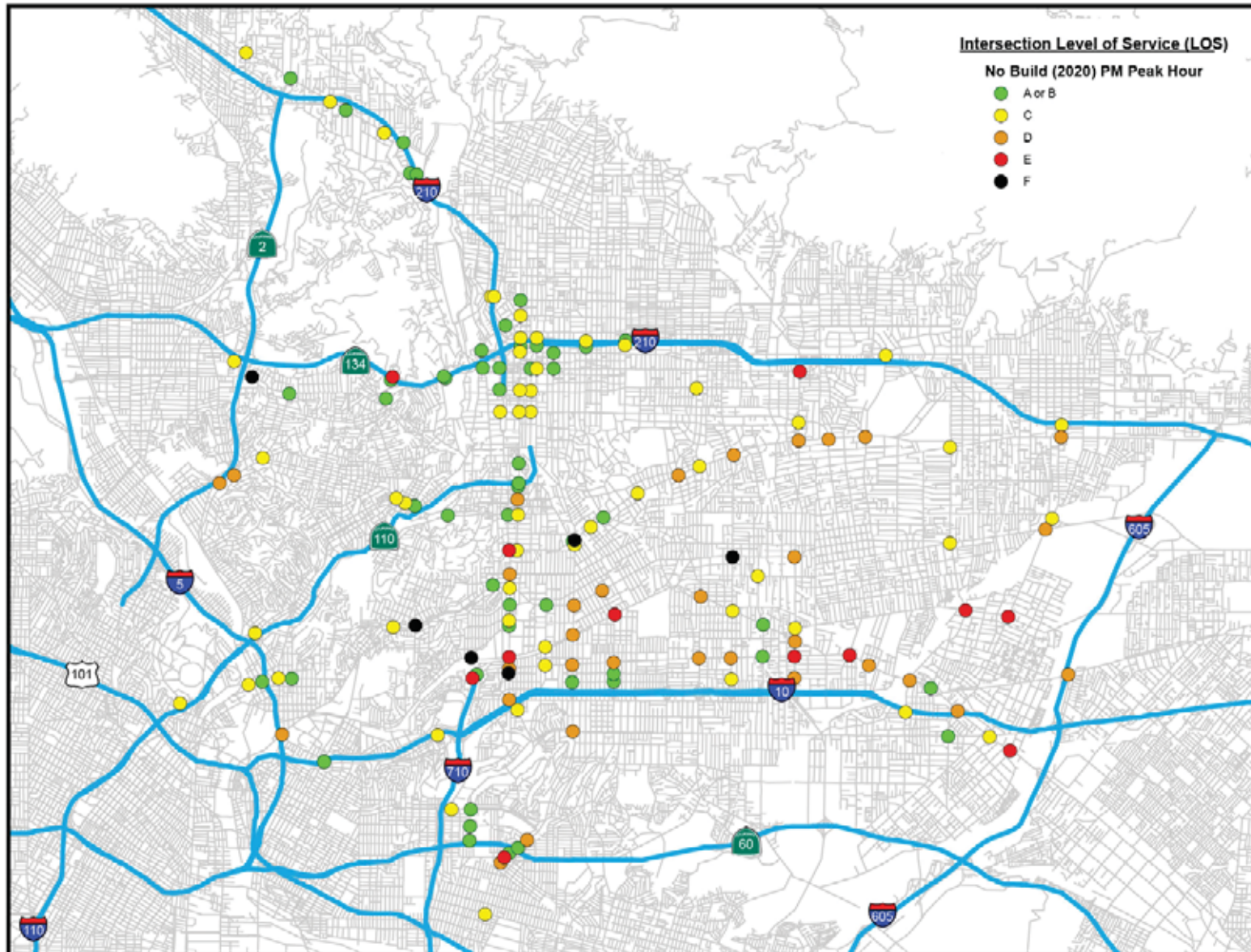


FIGURE 5-29
 Opening Year (2020 PM) Intersection LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

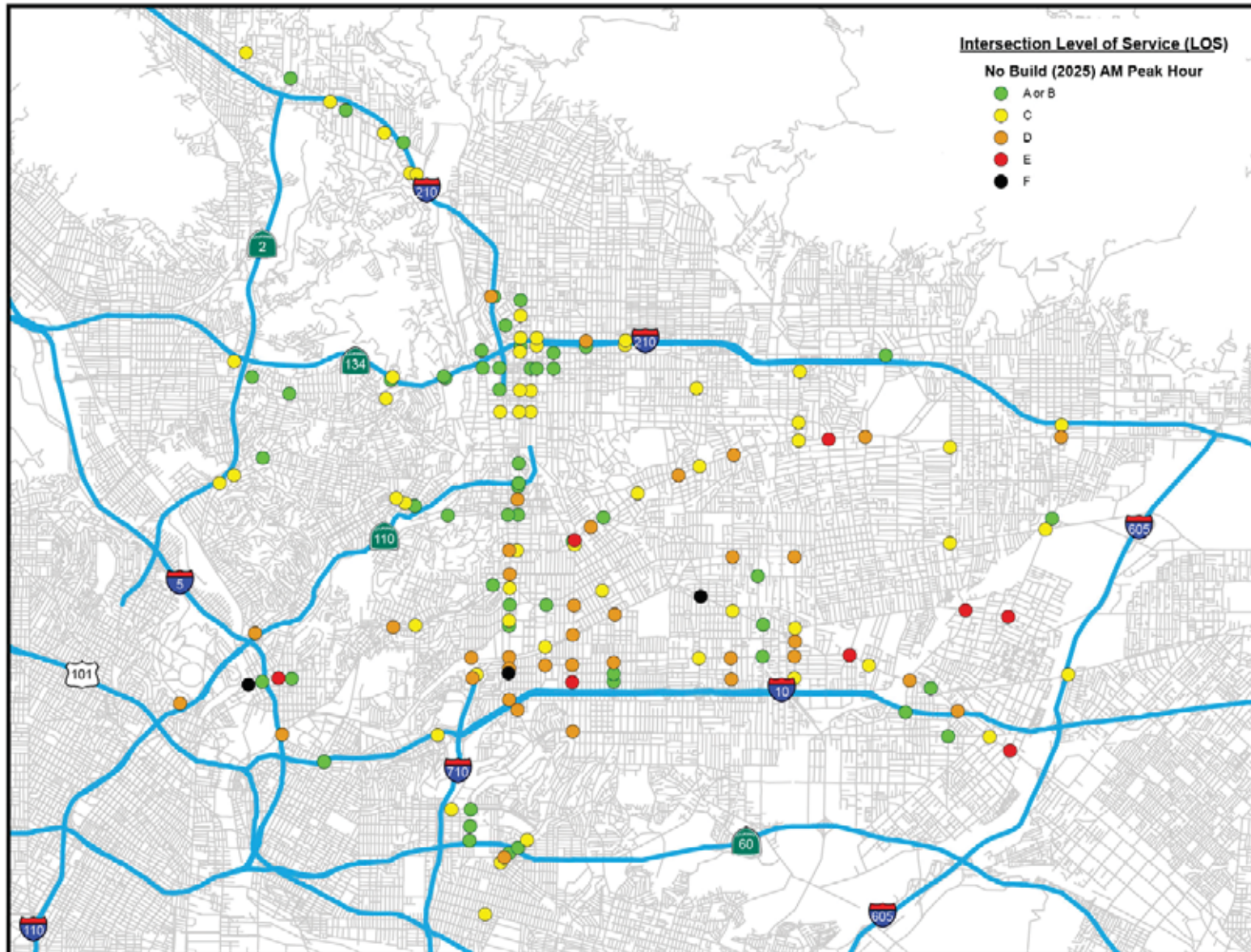


FIGURE 5-30
 Opening Year (2025 AM) Intersection LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

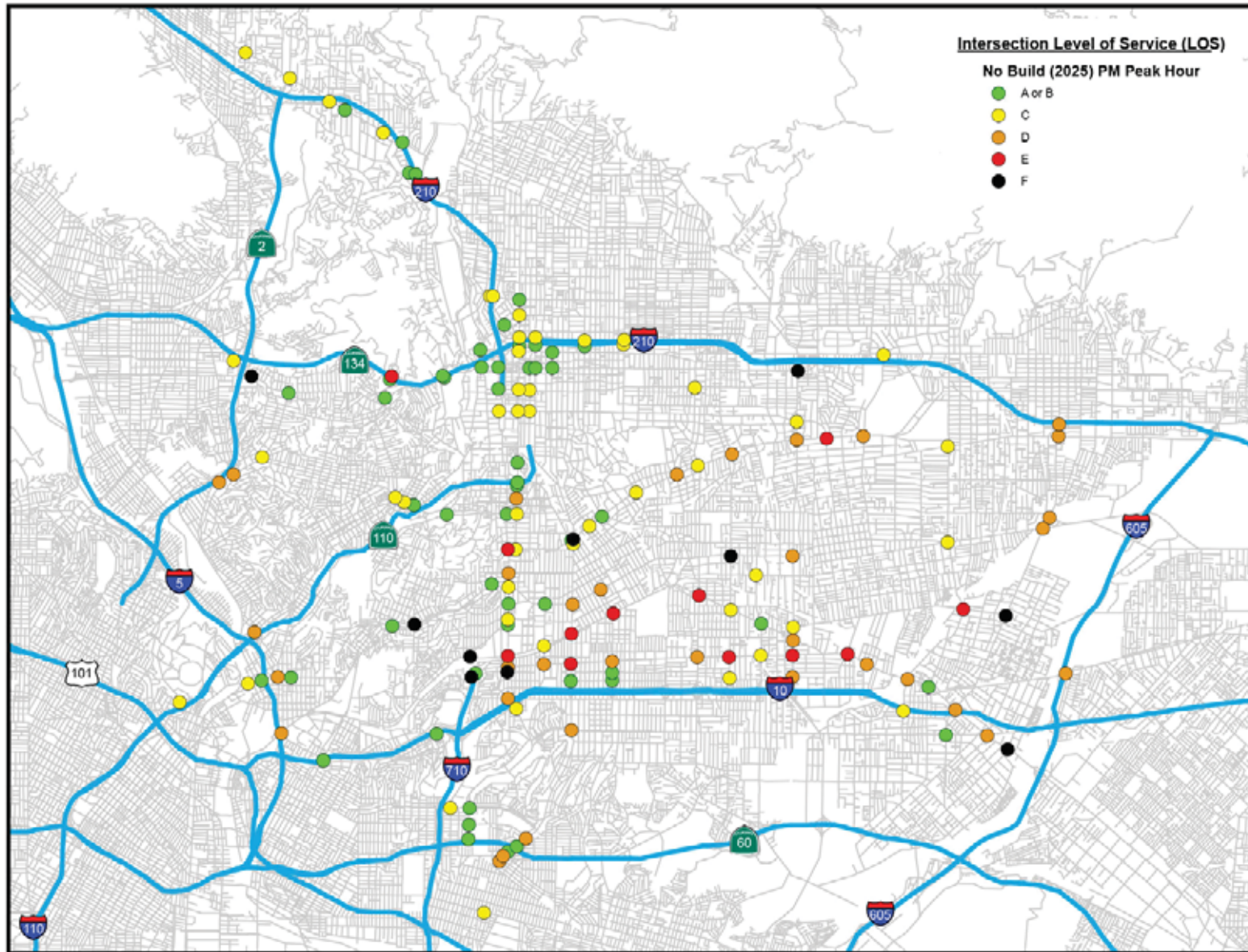


FIGURE 5-31
 Opening Year (2025 PM) Intersection LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

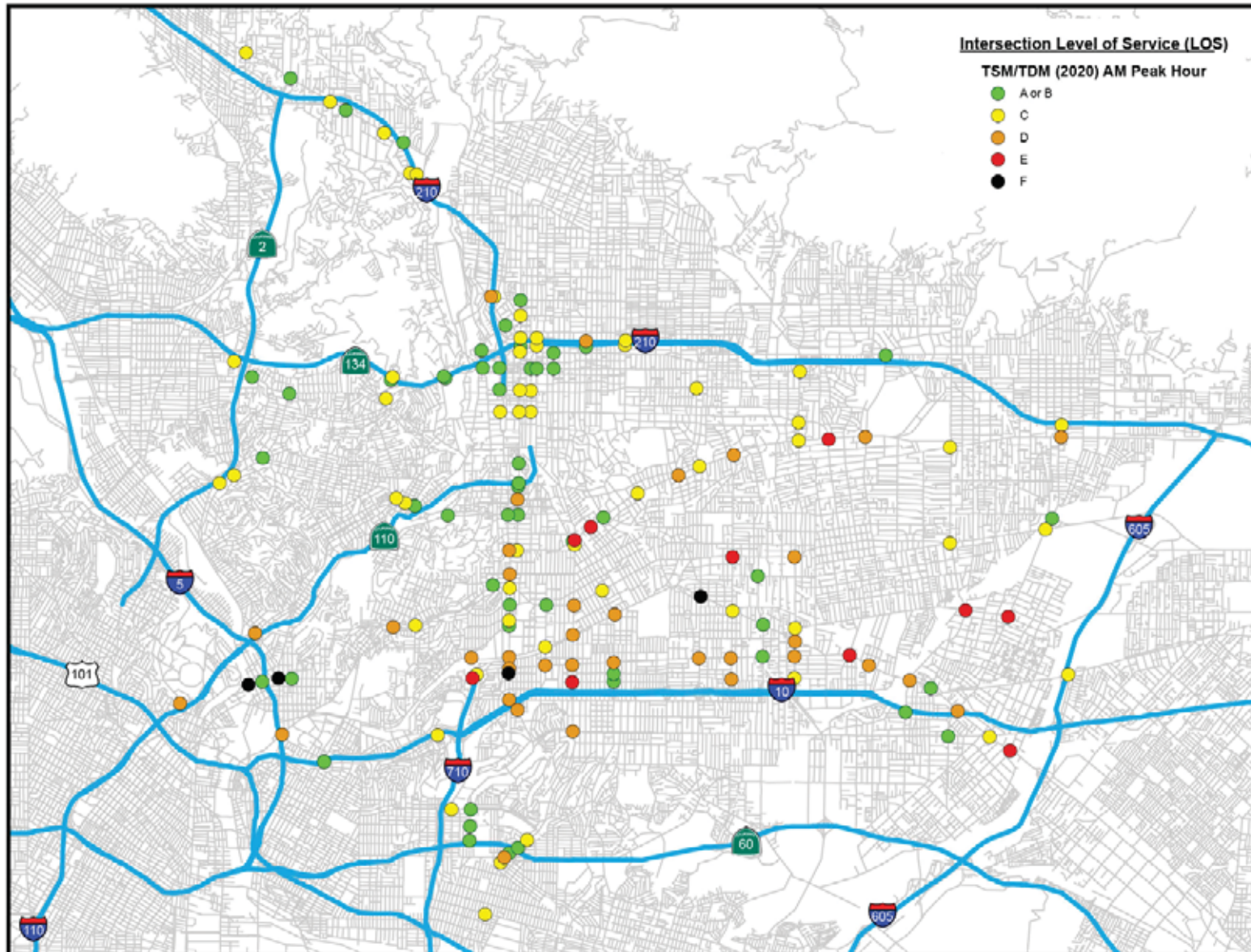


FIGURE 5-32
 Opening Year (2020 AM) Intersection LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

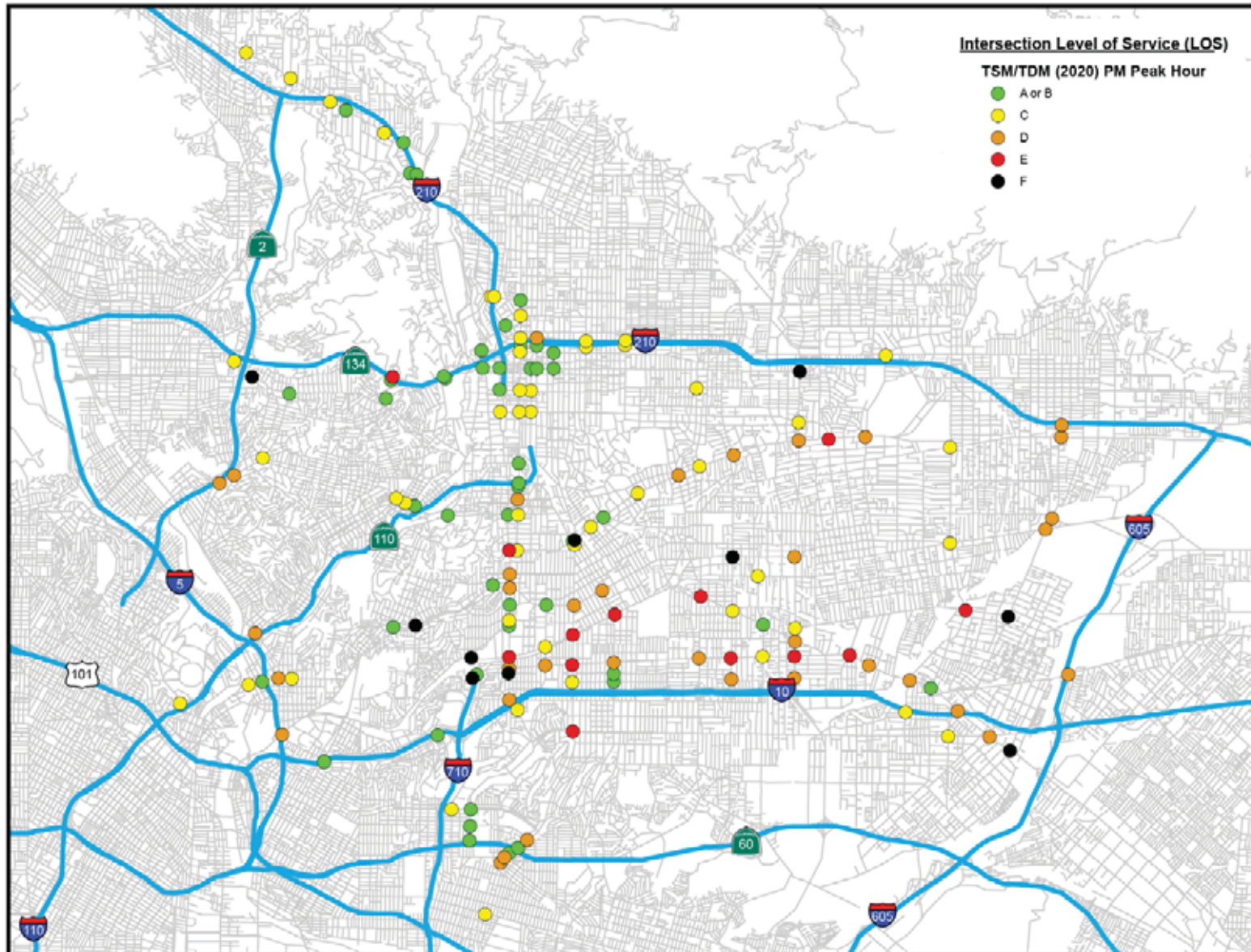


FIGURE 5-33
 Opening Year (2020 PM) Intersection LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

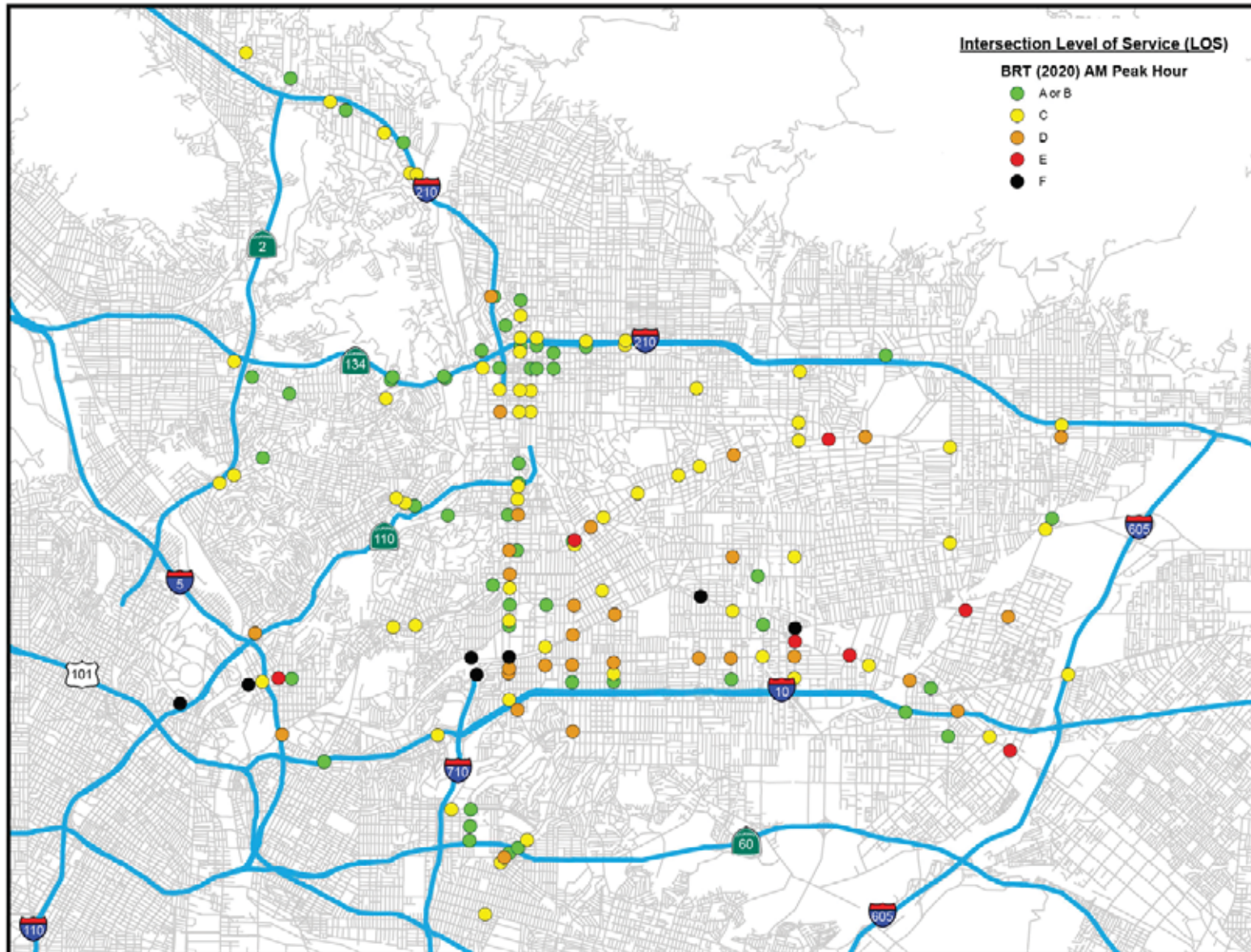


FIGURE 5-34
 Opening Year (2020 AM) Intersection LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

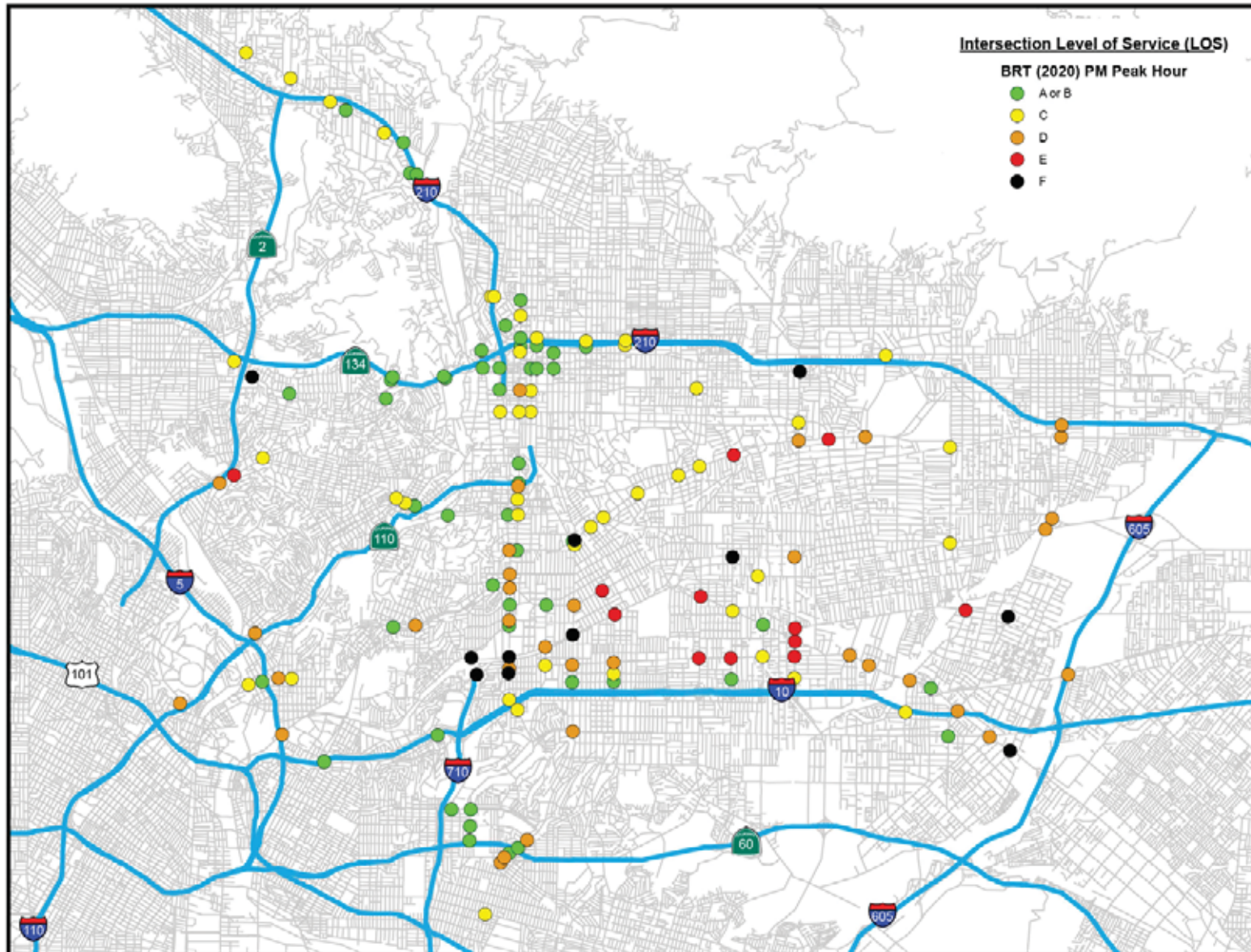


FIGURE 5-35
 Opening Year (2020 PM) Intersection LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

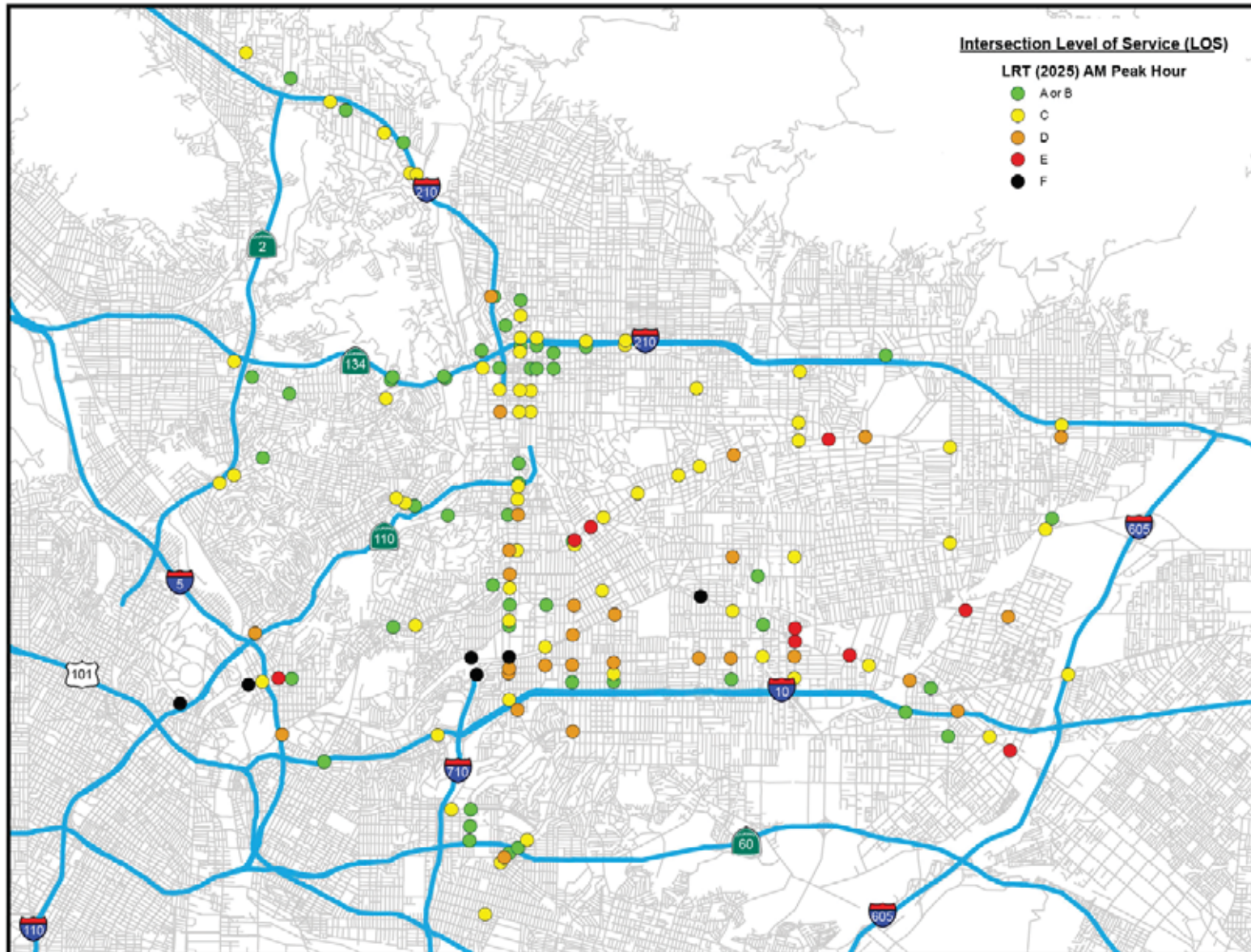


FIGURE 5-36
 Opening Year (2025 AM) Intersection LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

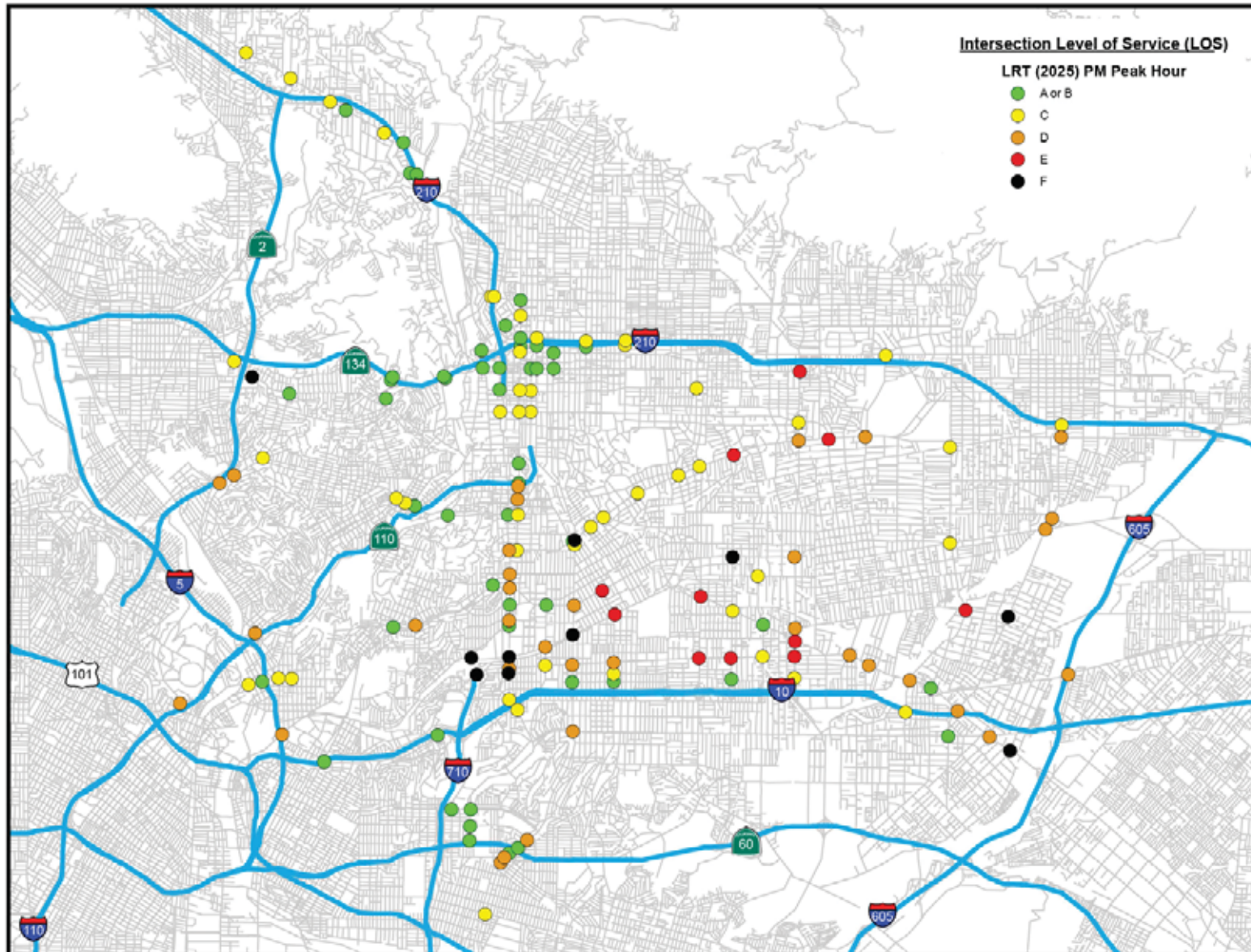


FIGURE 5-37
 Opening Year (2025 PM) Intersection LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

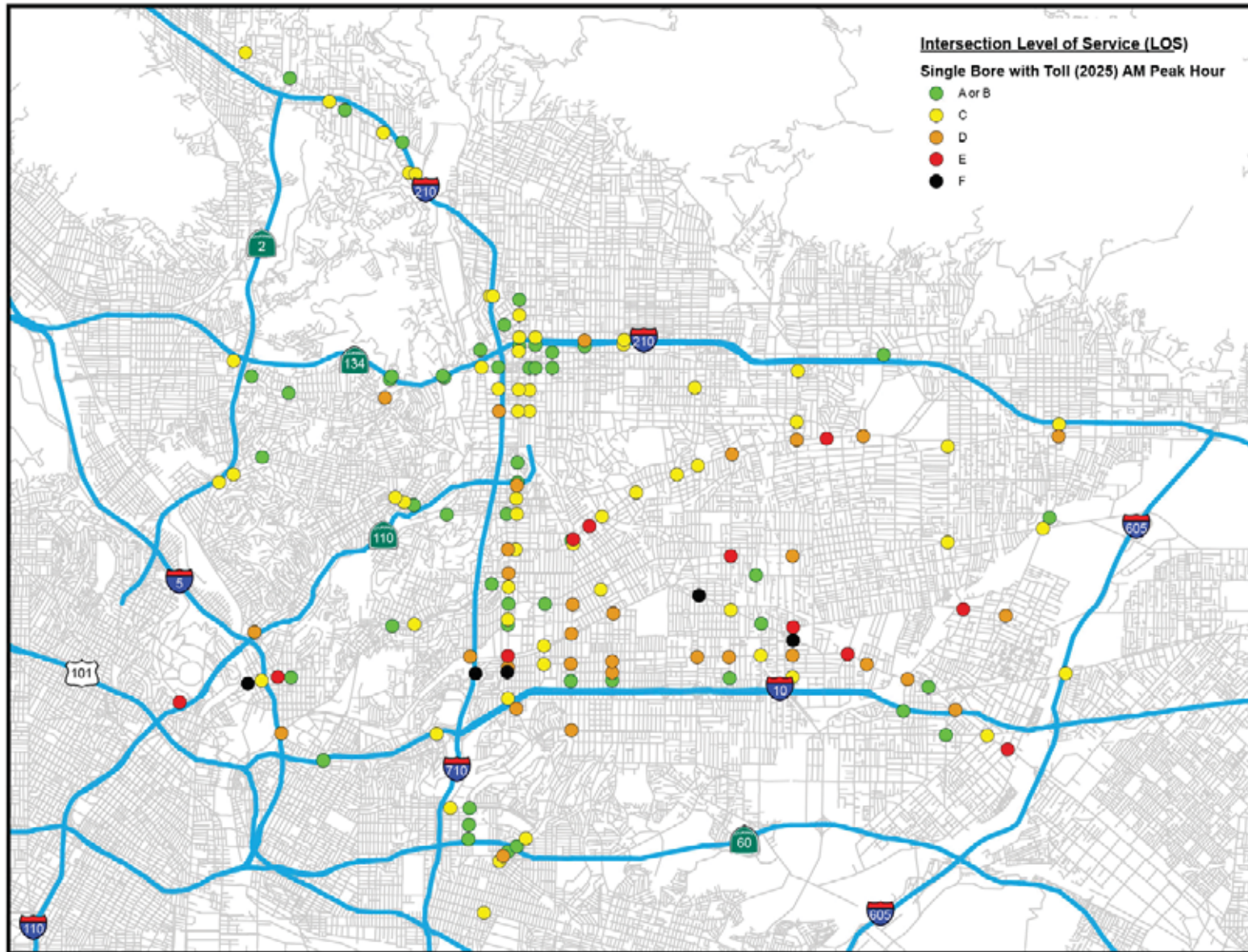


FIGURE 5-38
 Opening Year (2025 AM) Intersection LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

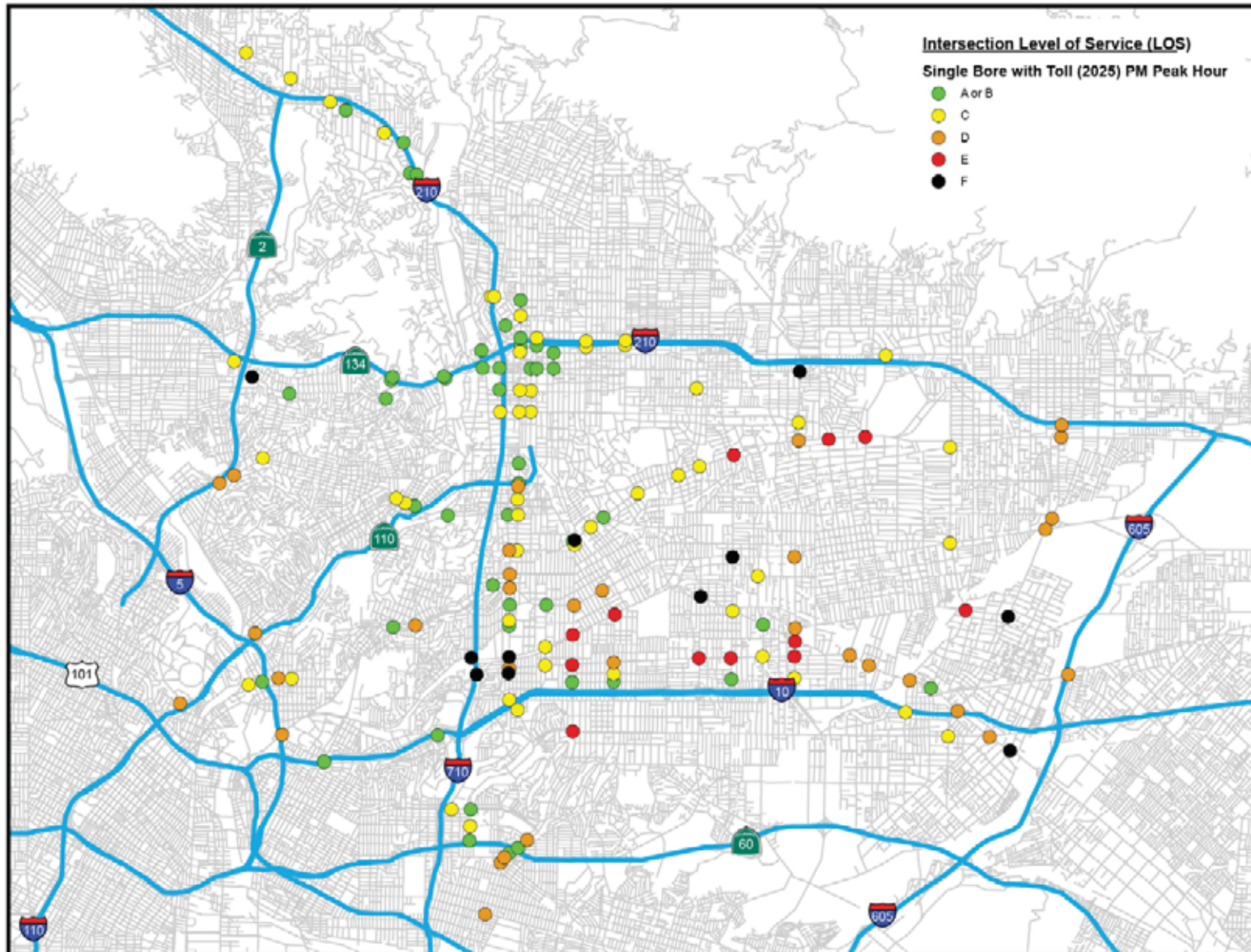


FIGURE 5-39
 Opening Year (2025 PM) Intersection LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

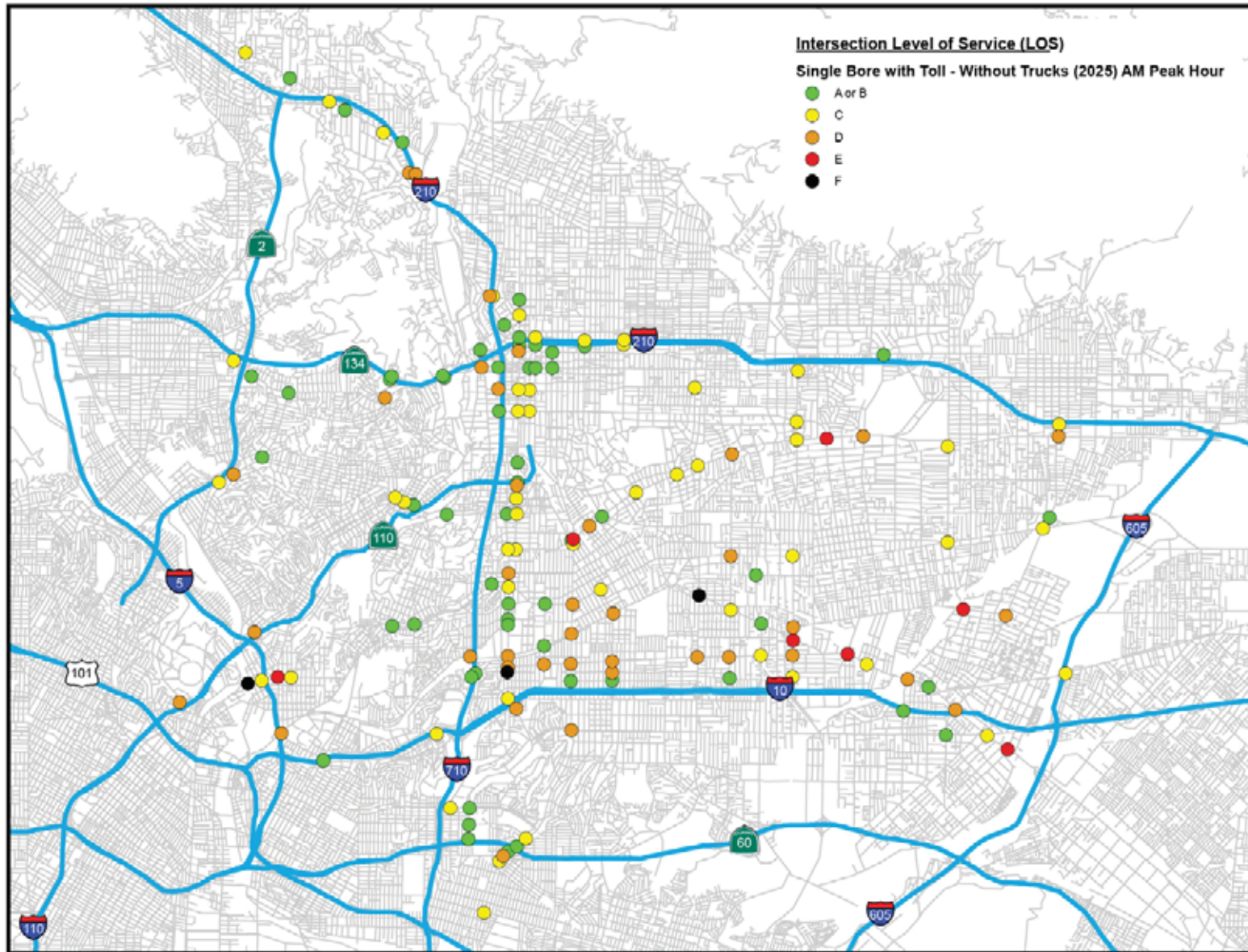


FIGURE 5-40
 Opening Year (2025 AM) Intersection LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

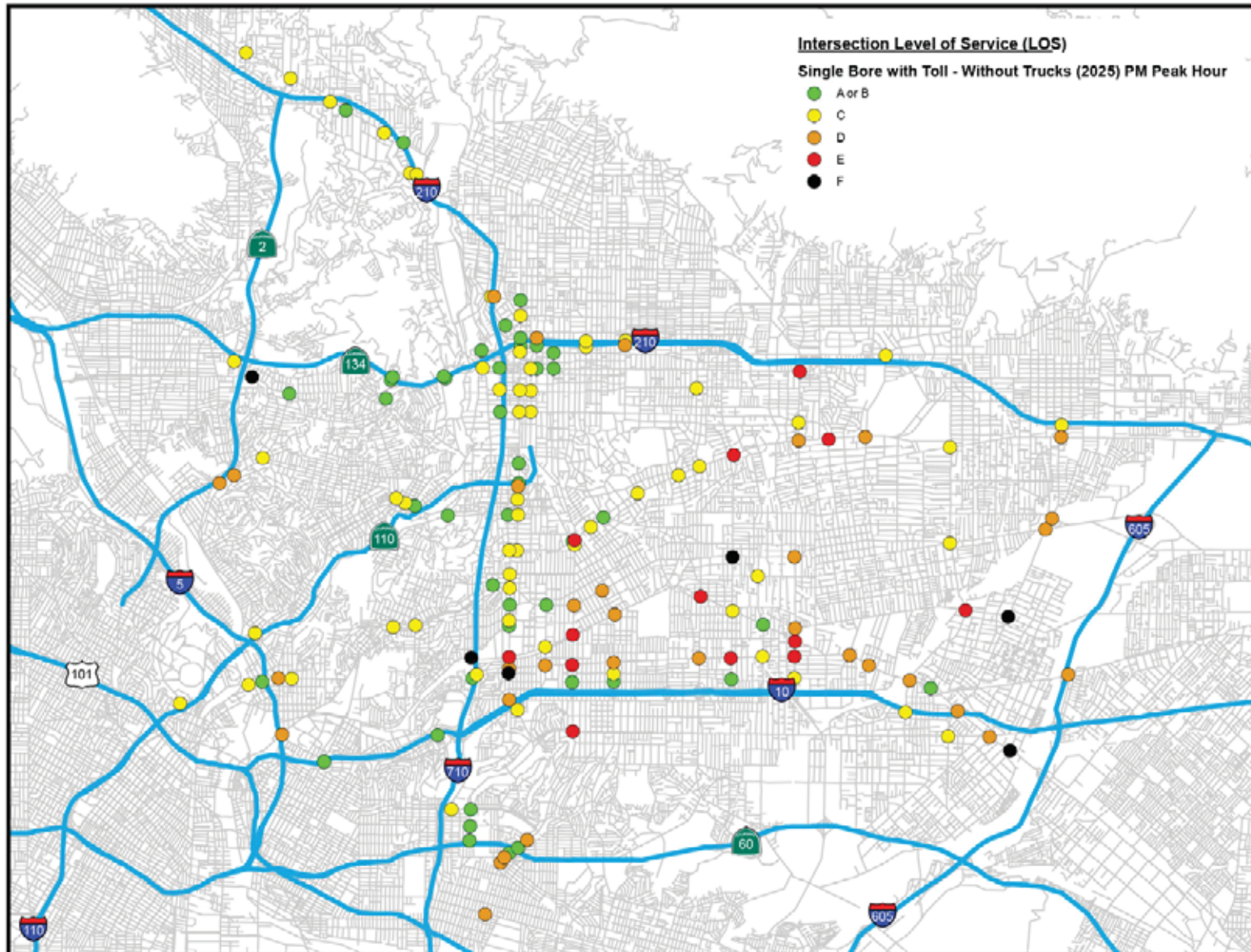


FIGURE 5-41
 Opening Year (2025 PM) Intersection LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

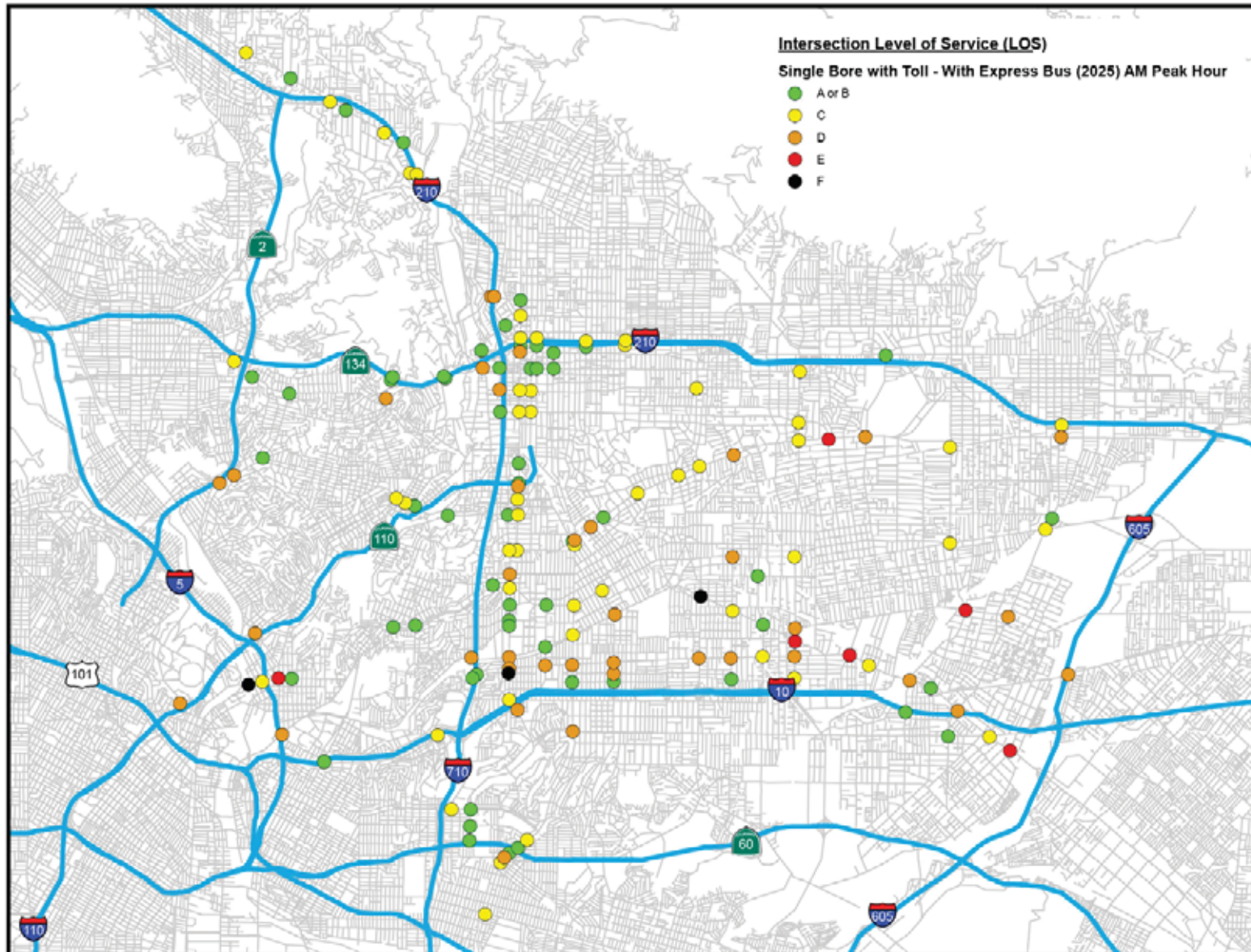


FIGURE 5-42
 Opening Year (2025 AM) Intersection LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

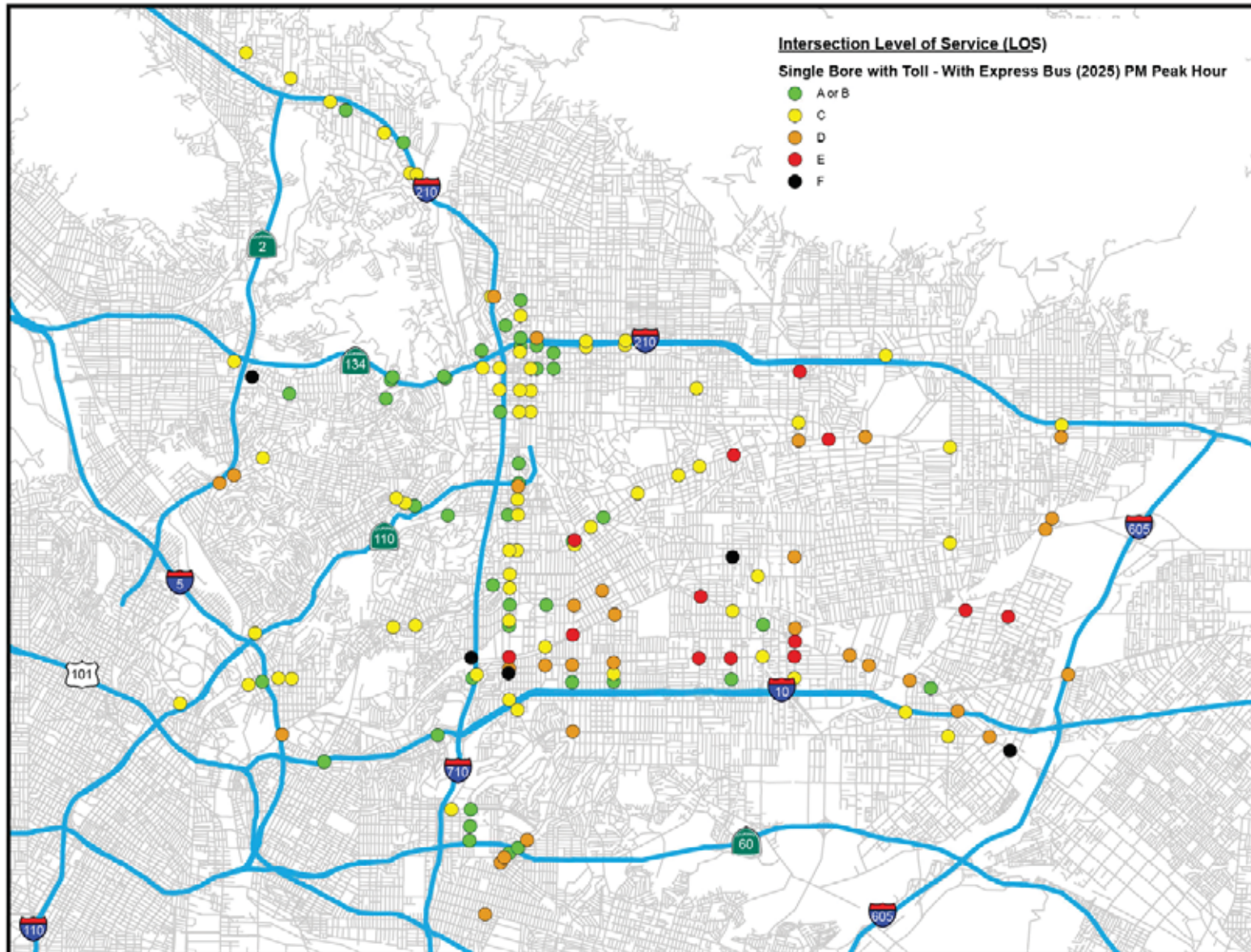


FIGURE 5-43
 Opening Year (2025 PM) Intersection LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

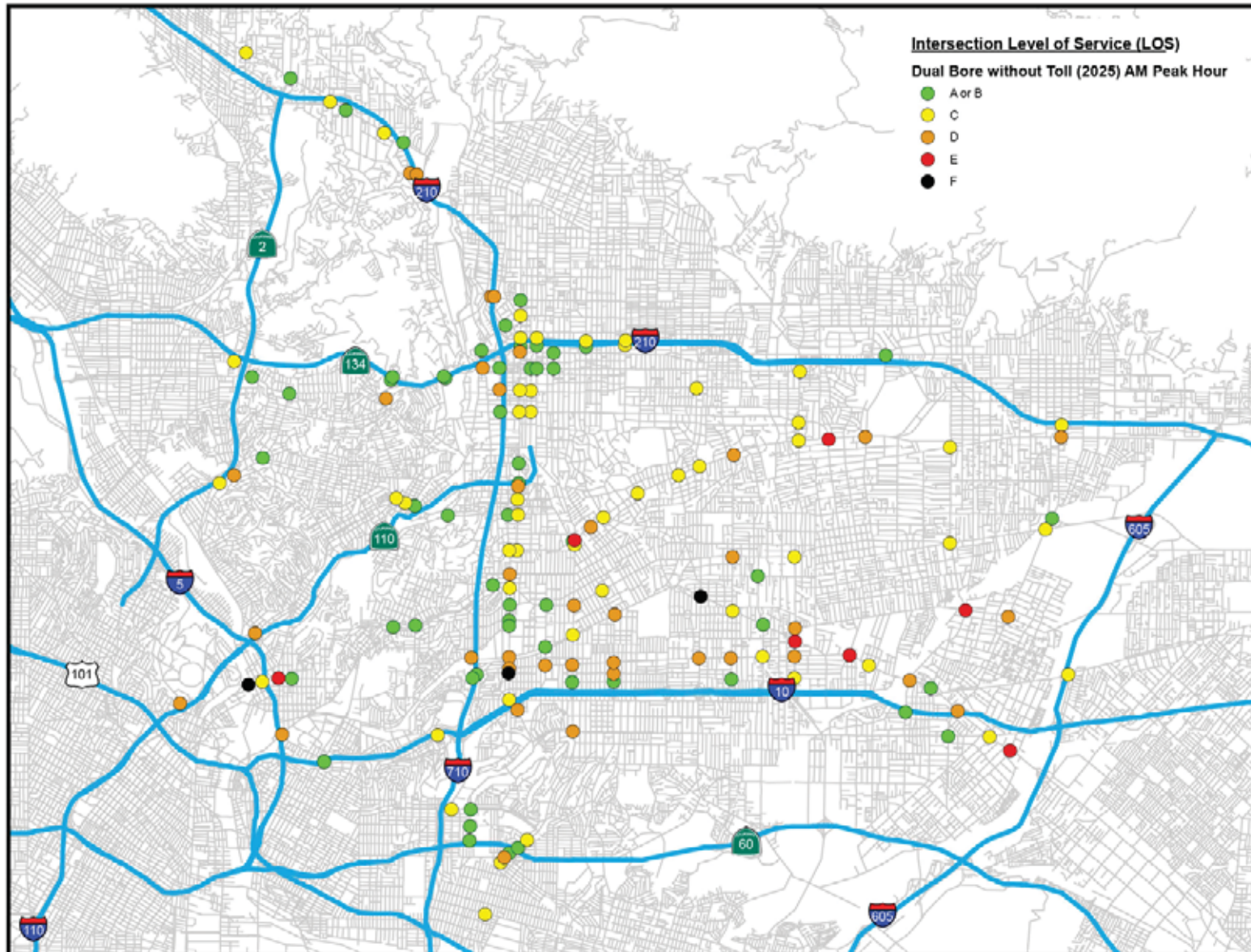


FIGURE 5-44
 Opening Year (2025 AM) Intersection LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

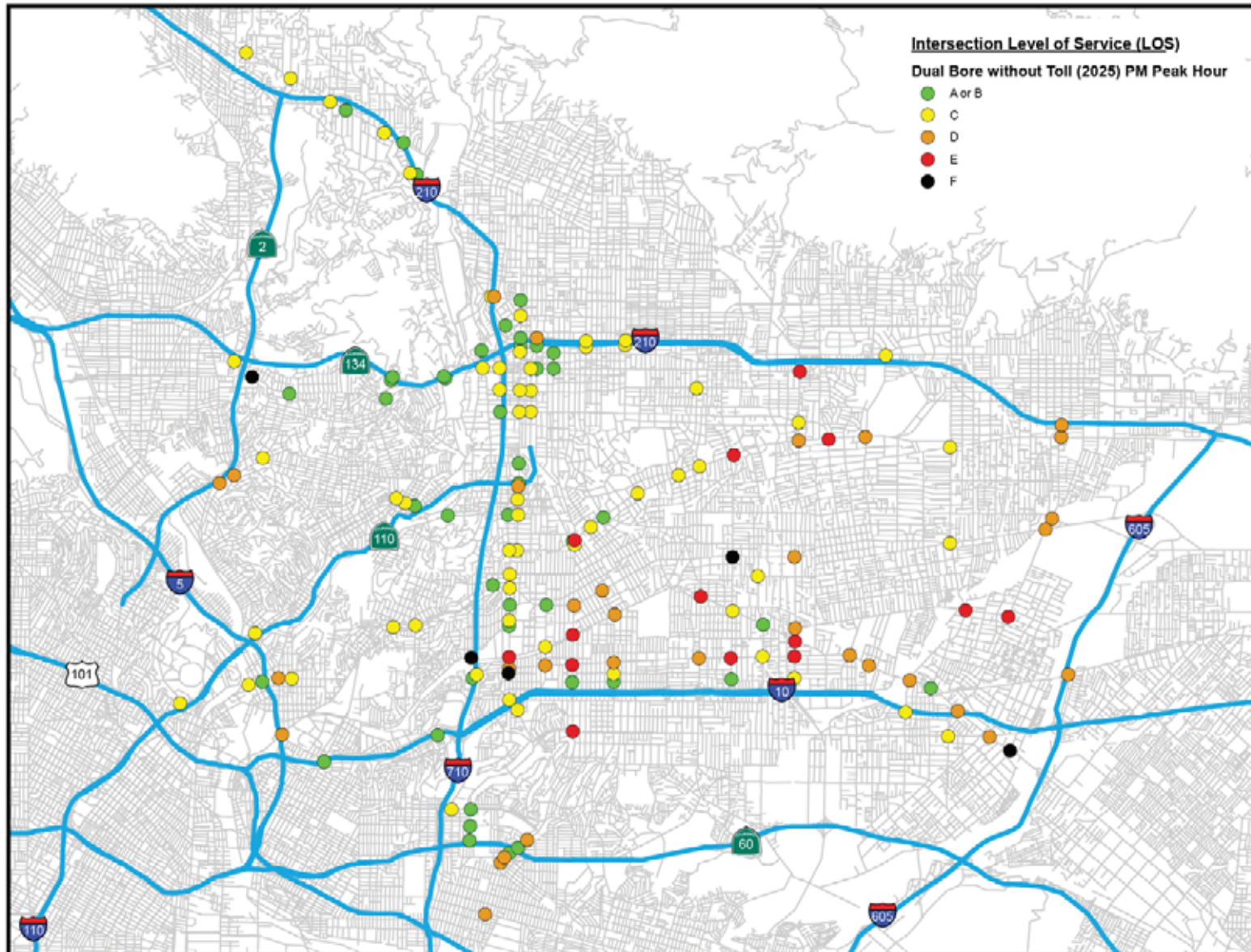


FIGURE 5-45
 Opening Year (2025 PM) Intersection LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

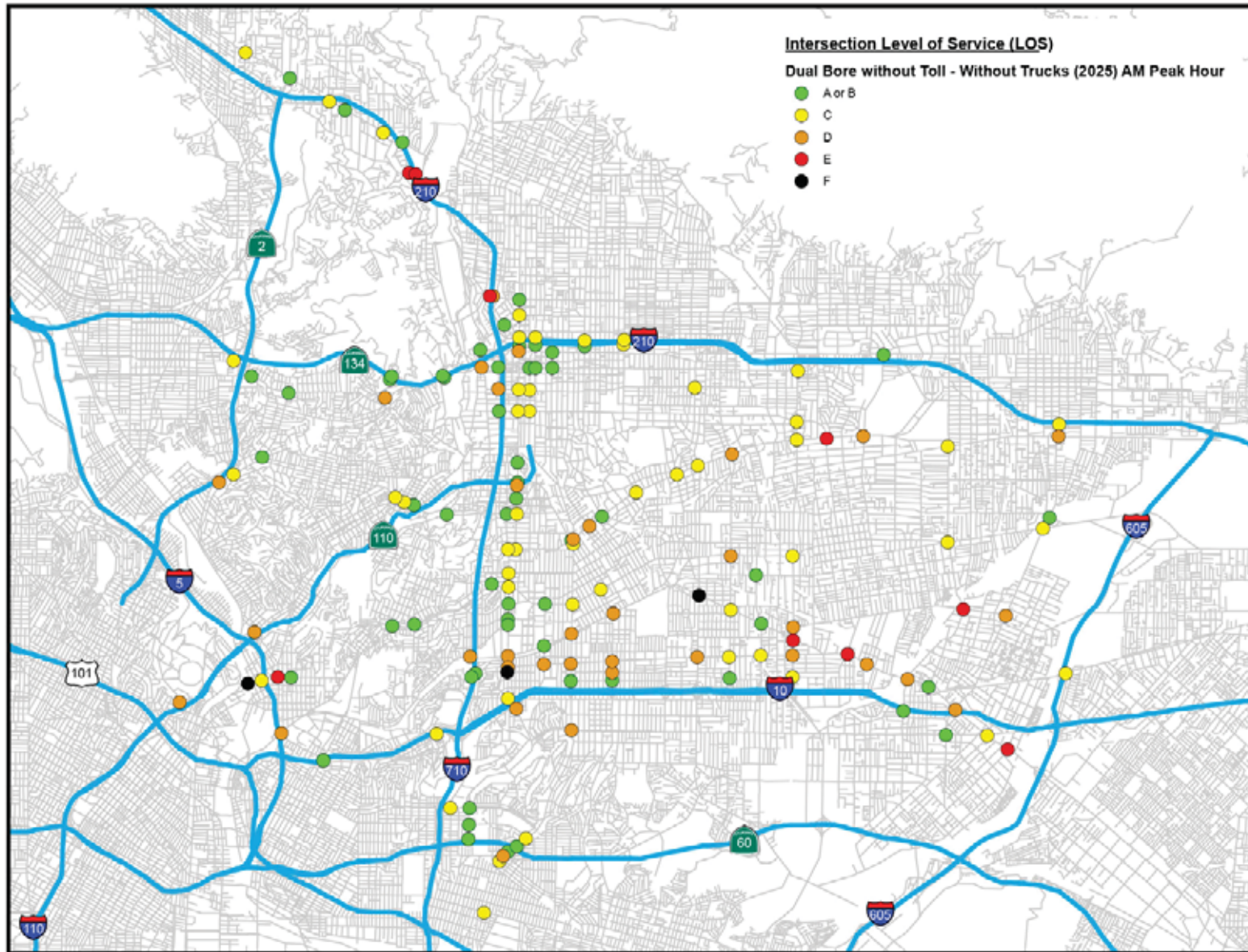


FIGURE 5-46
 Opening Year (2025 AM) Intersection LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

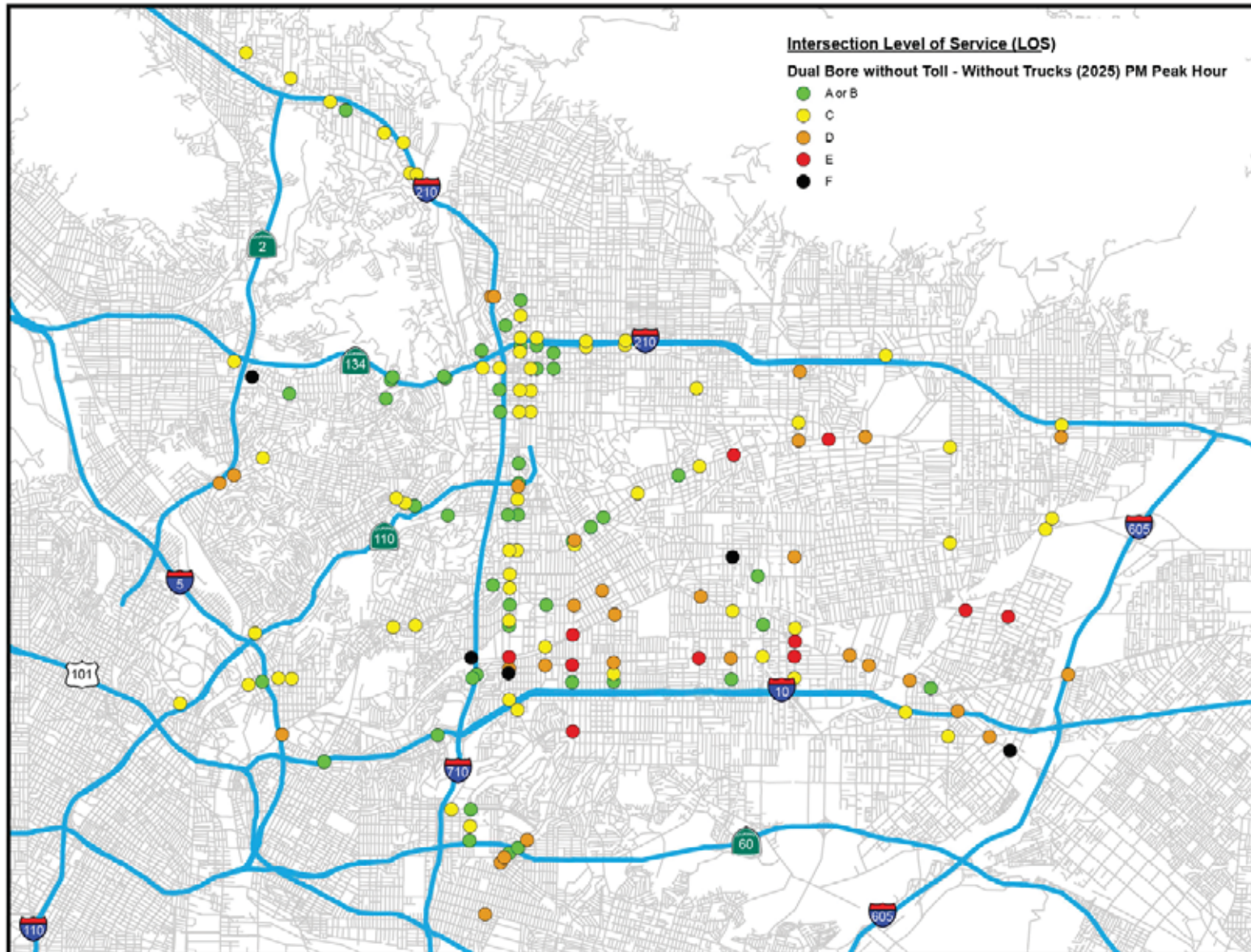


FIGURE 5-47
 Opening Year (2025 PM) Intersection LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

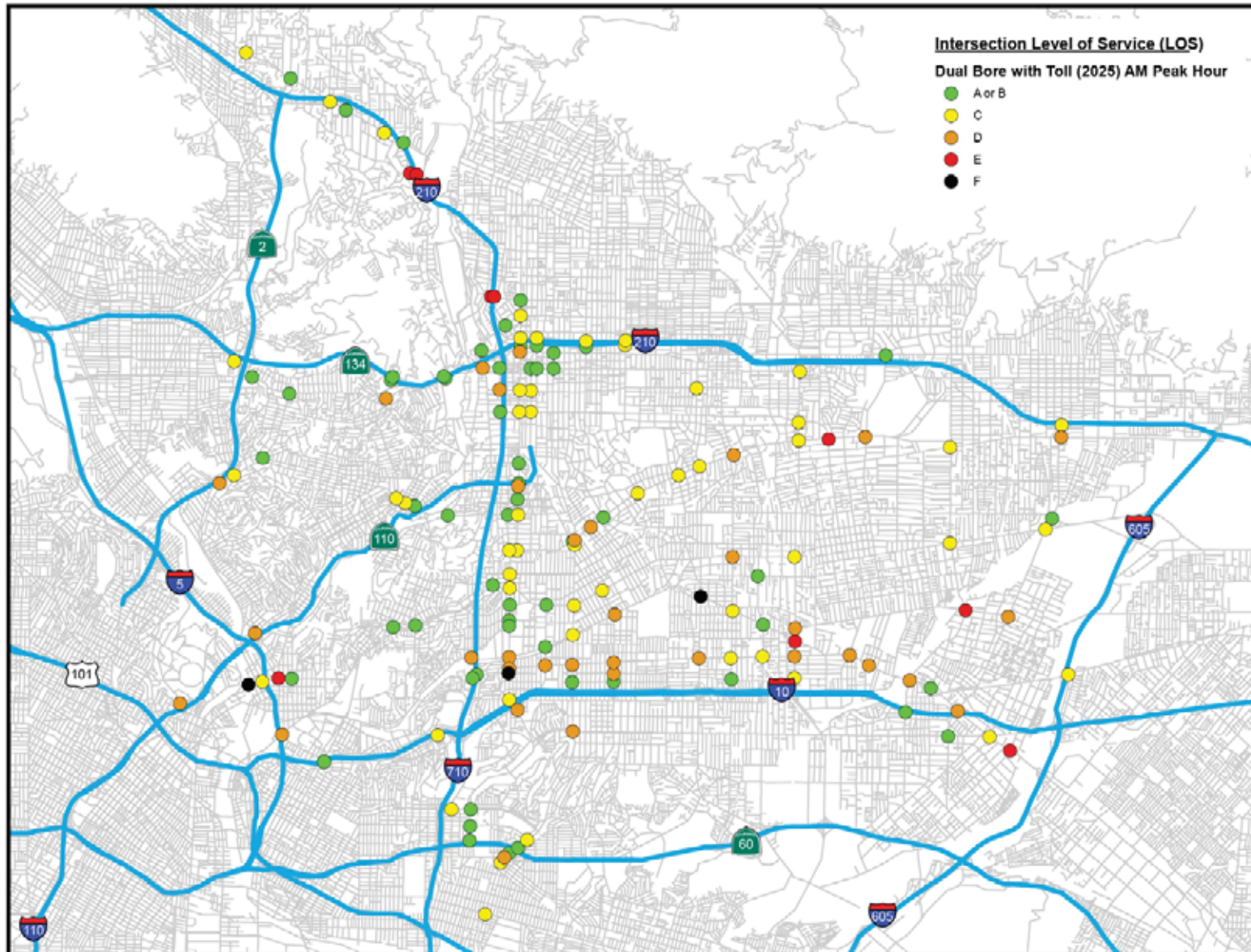


FIGURE 5-48
 Opening Year (2025 AM) Intersection LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

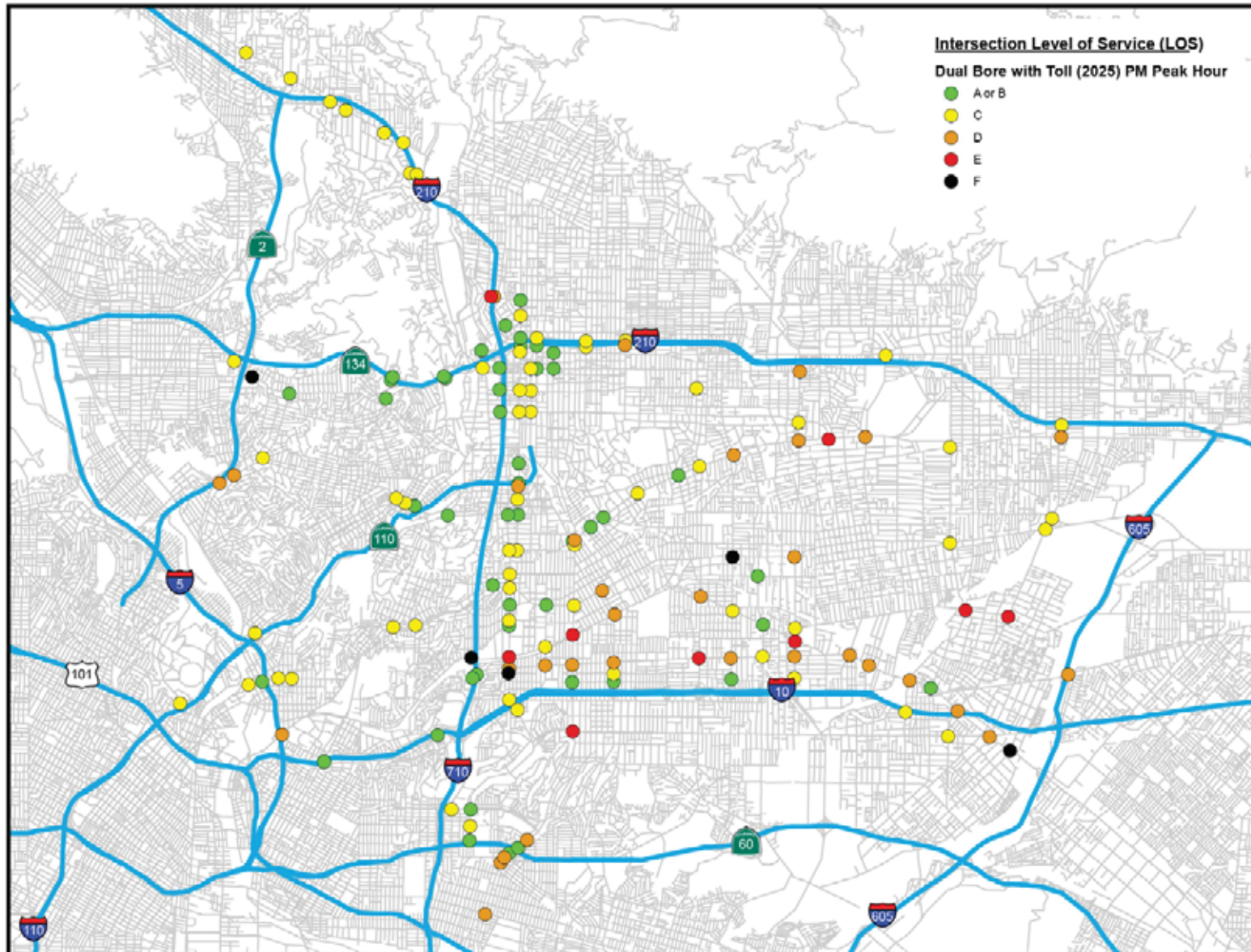


FIGURE 5-49
 Opening Year (2025 PM) Intersection LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

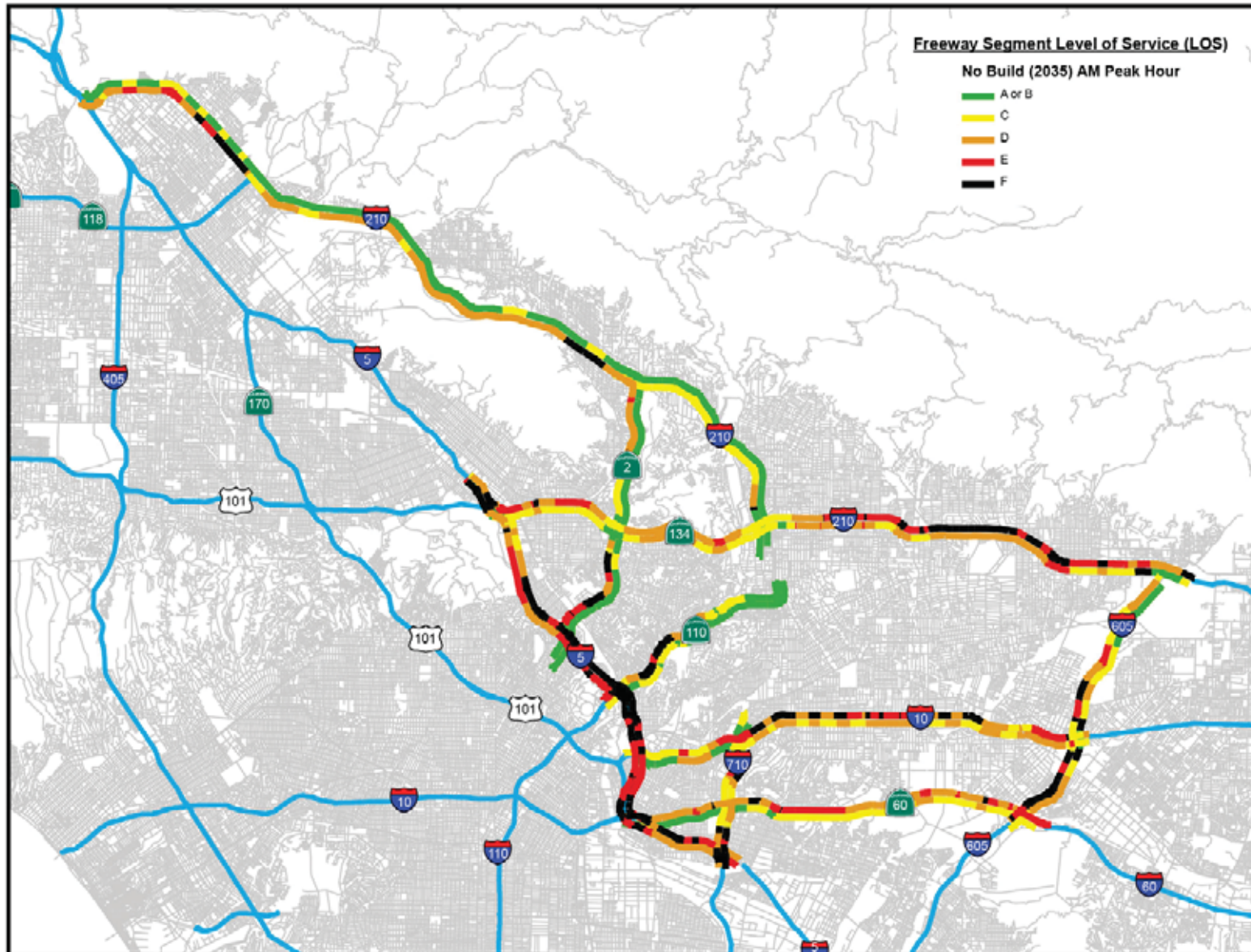


FIGURE 5-50
 Horizon Year (2035 AM) Freeway LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

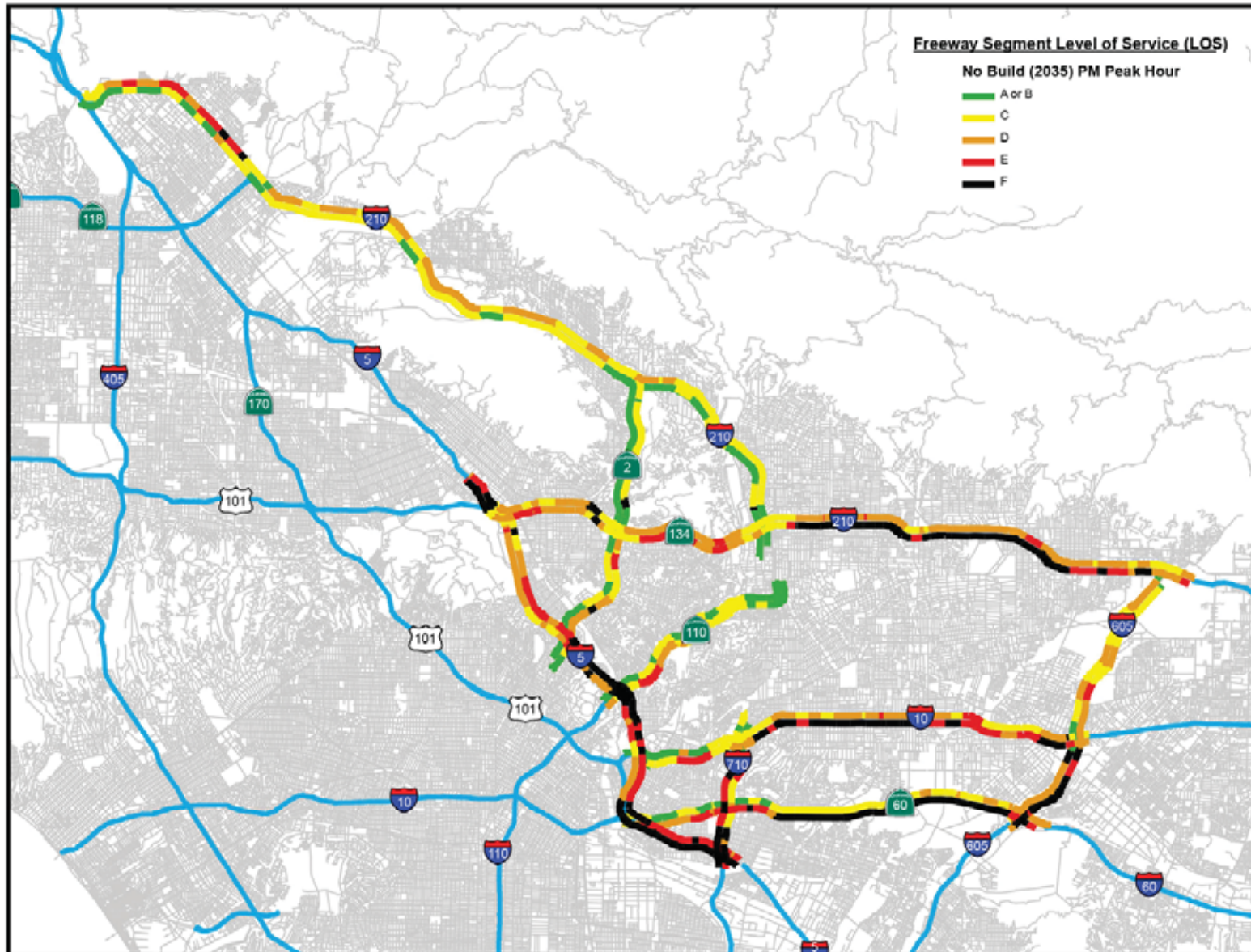


FIGURE 5-51
 Horizon Year (2035 PM) Freeway LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

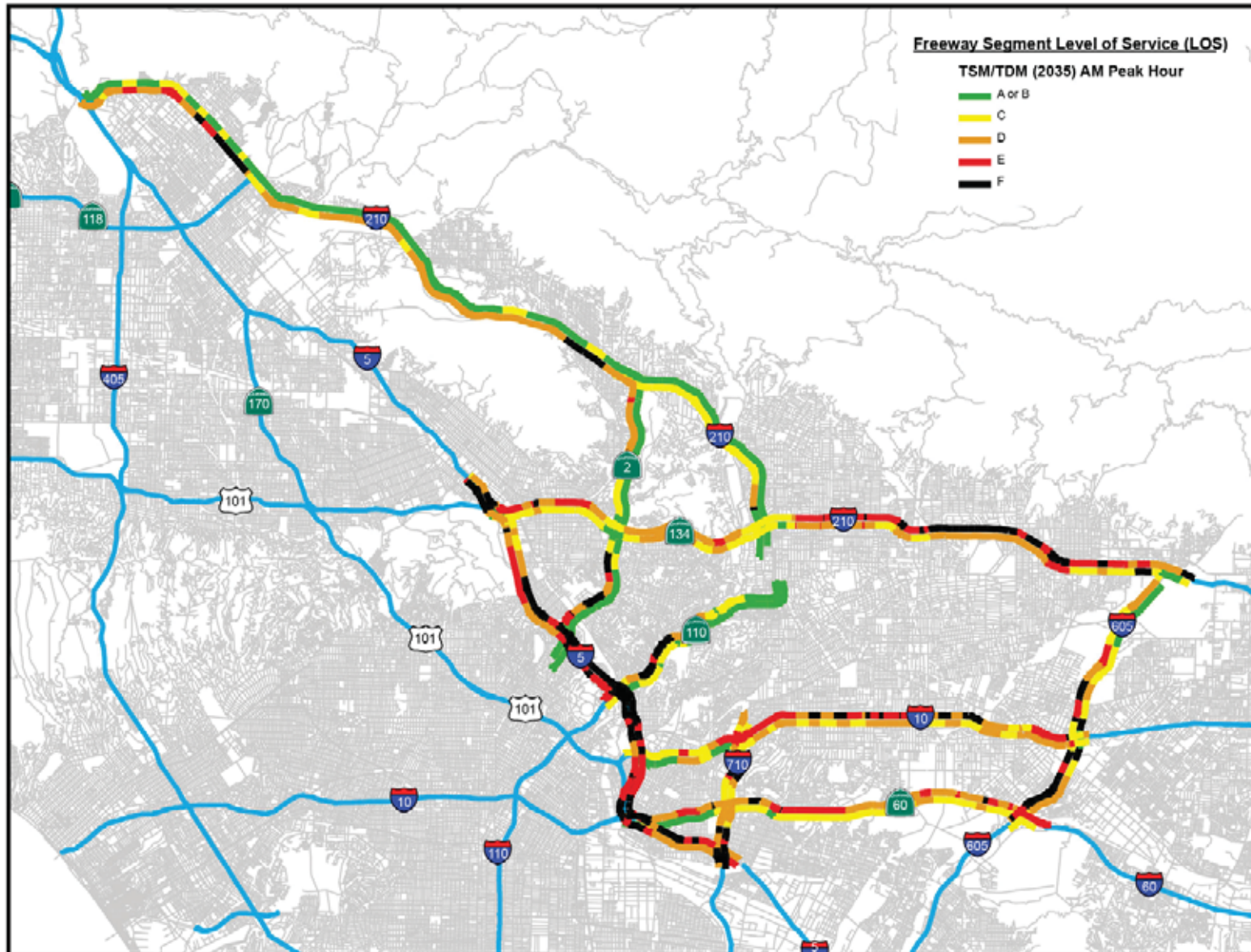


FIGURE 5-52
 Horizon Year (2035 AM) Freeway LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

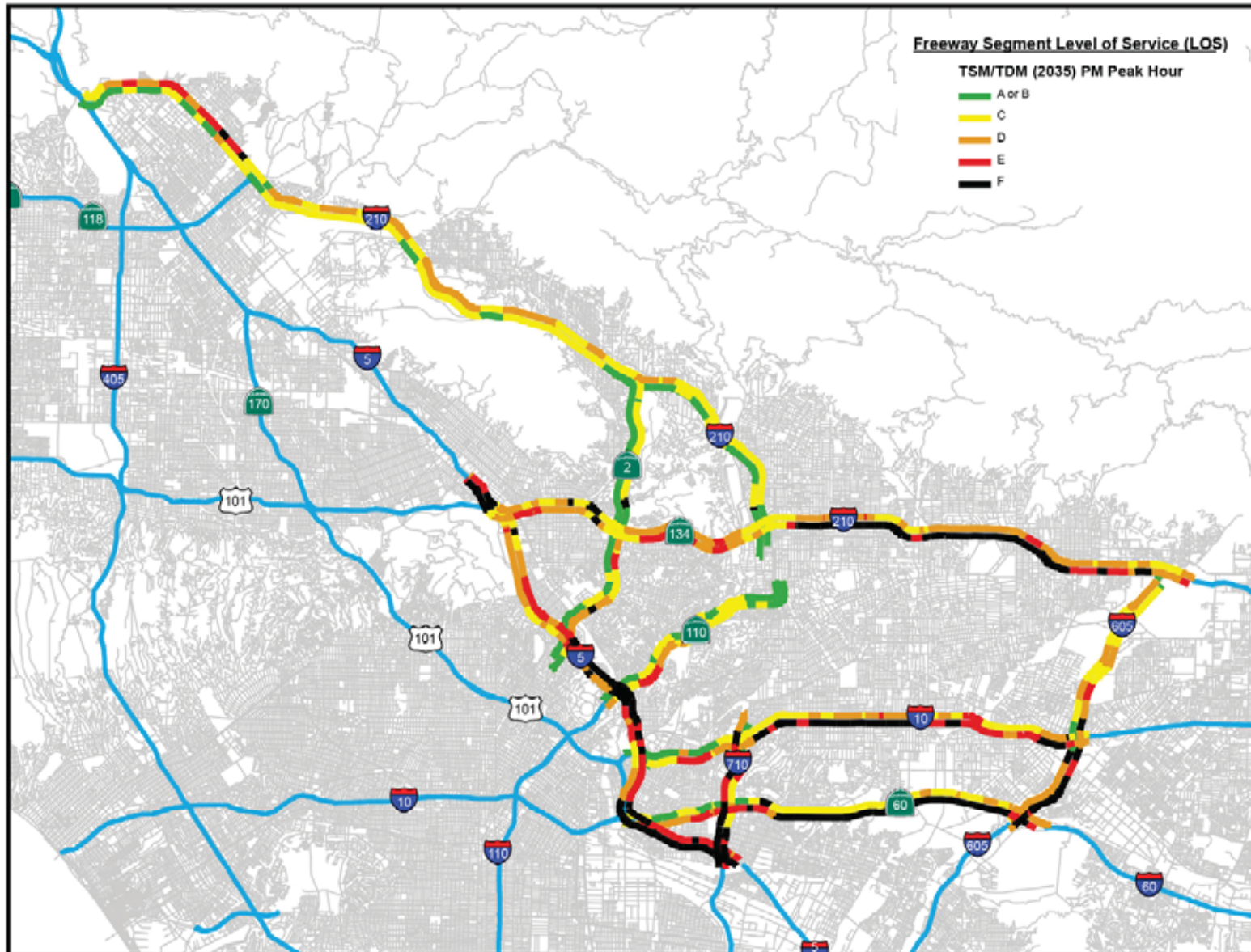


FIGURE 5-53
 Horizon Year (2035 PM) Freeway LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

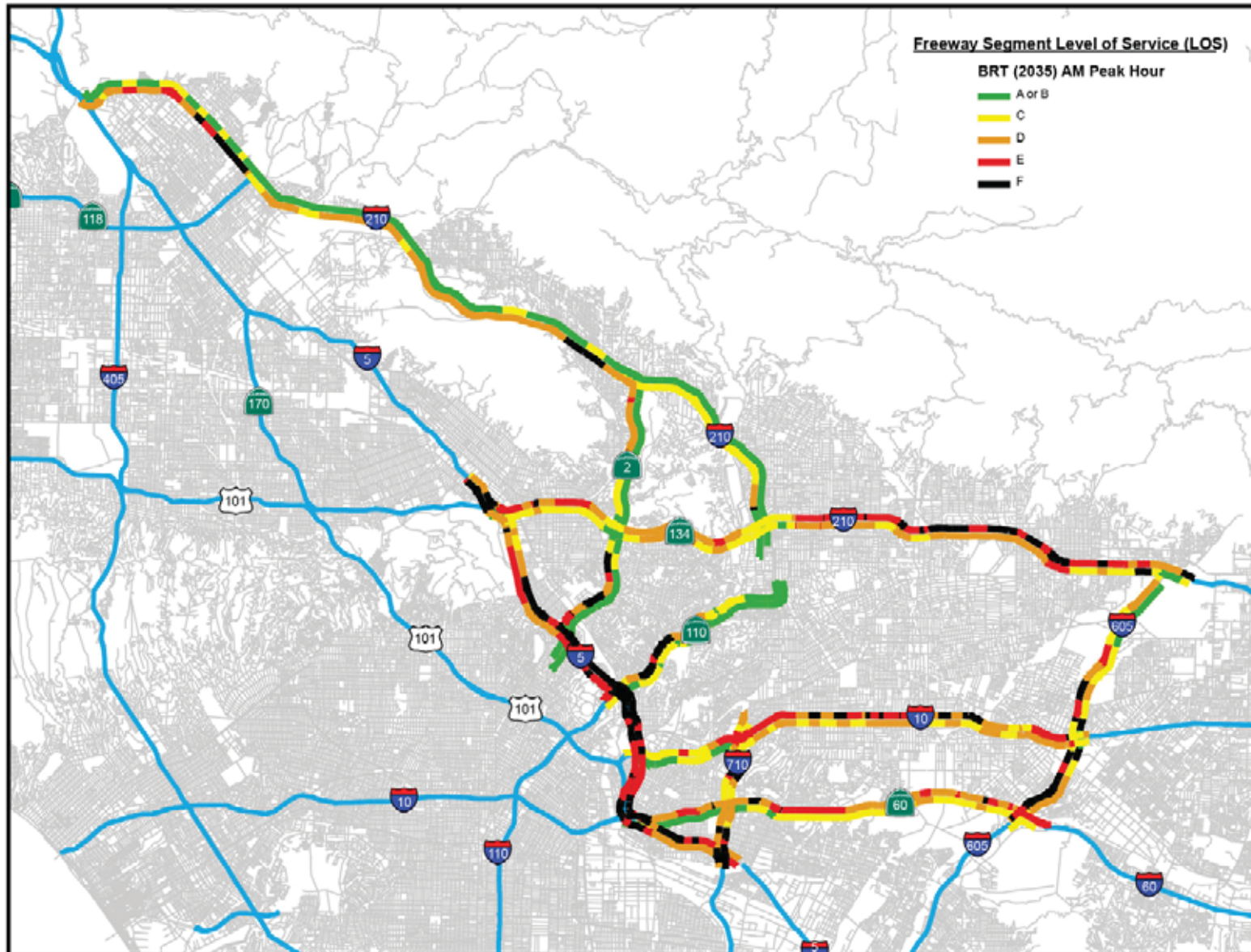


FIGURE 5-54
 Horizon Year (2035 AM) Freeway LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

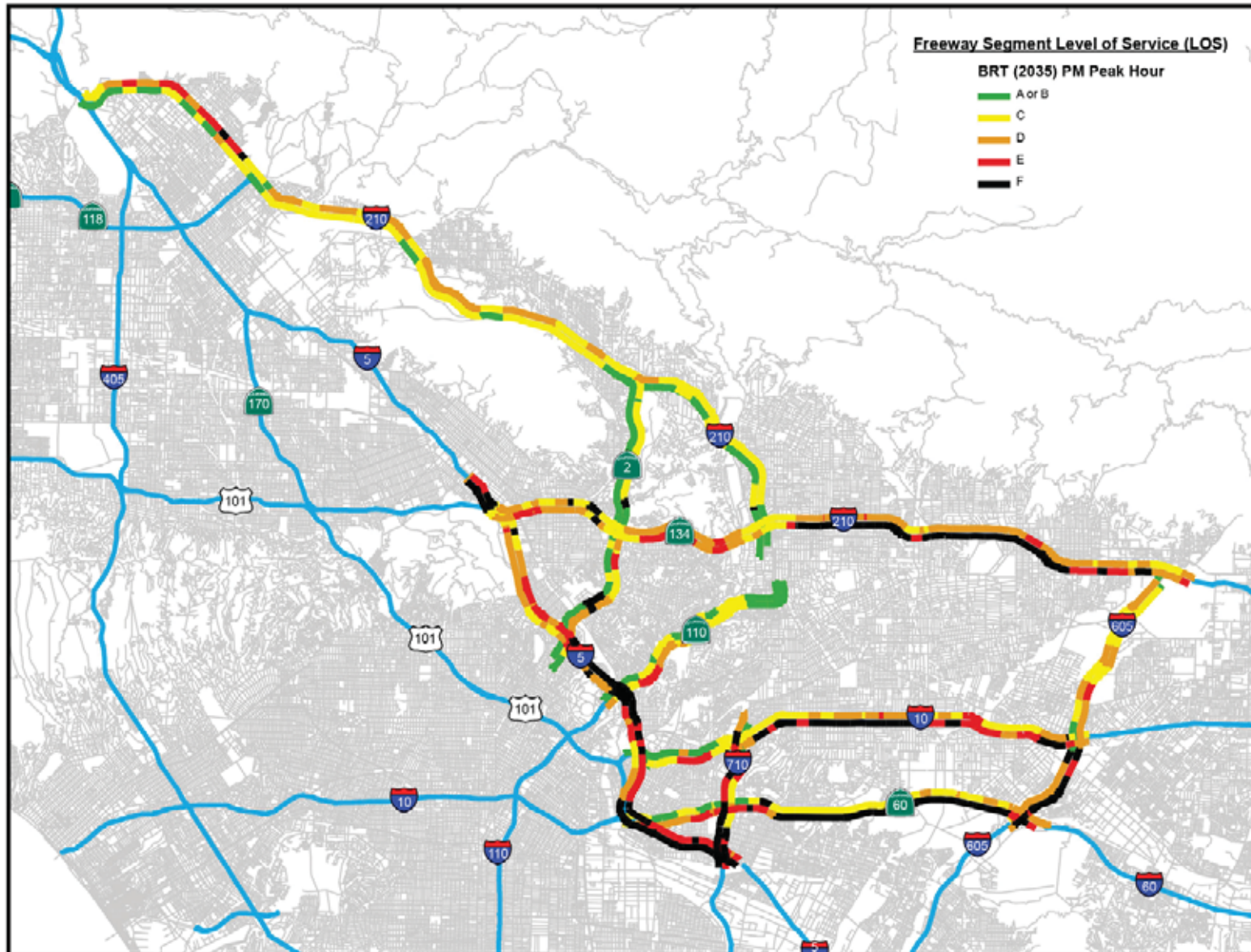


FIGURE 5-55
 Horizon Year (2035 PM) Freeway LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

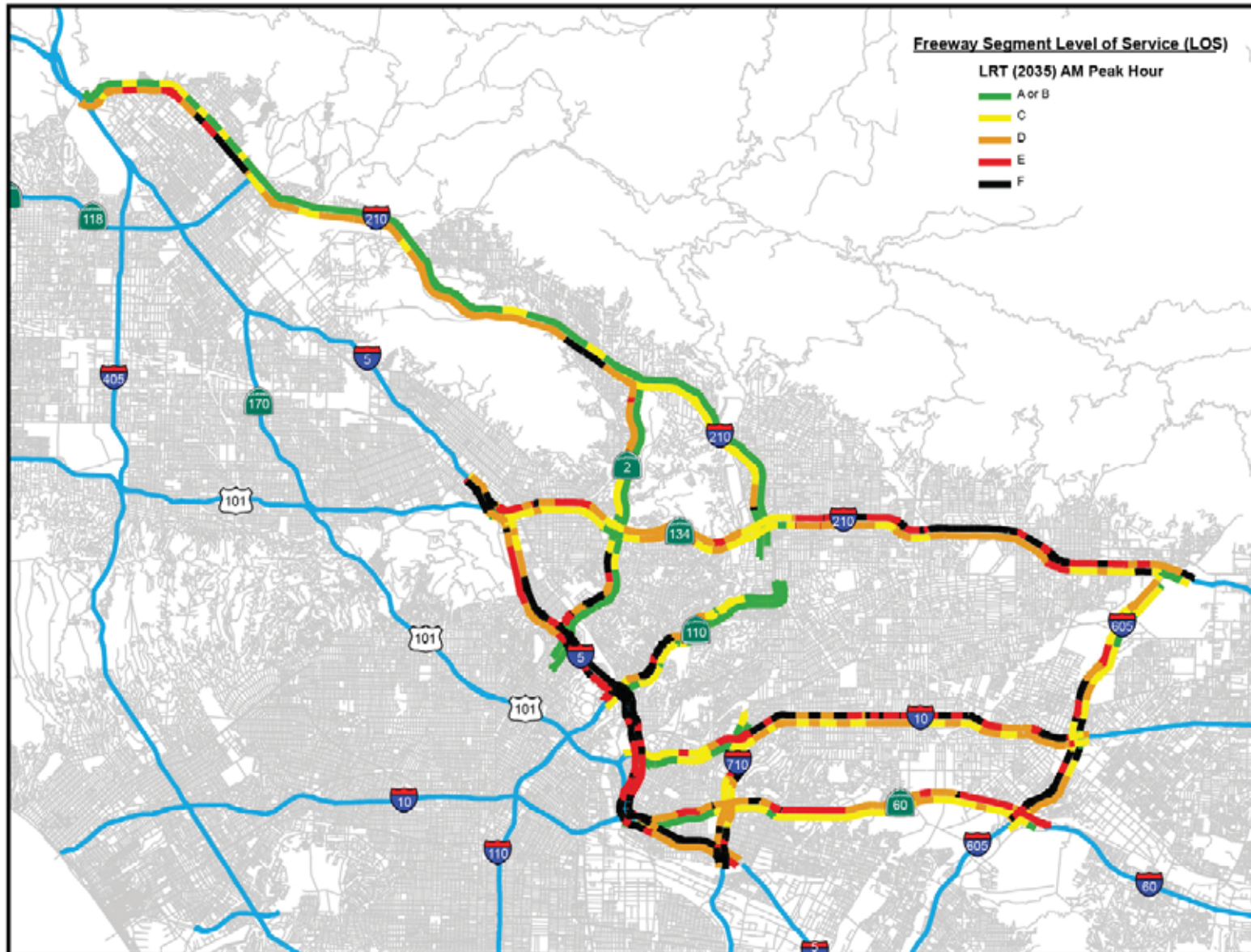


FIGURE 5-56
 Horizon Year (2035 AM) Freeway LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

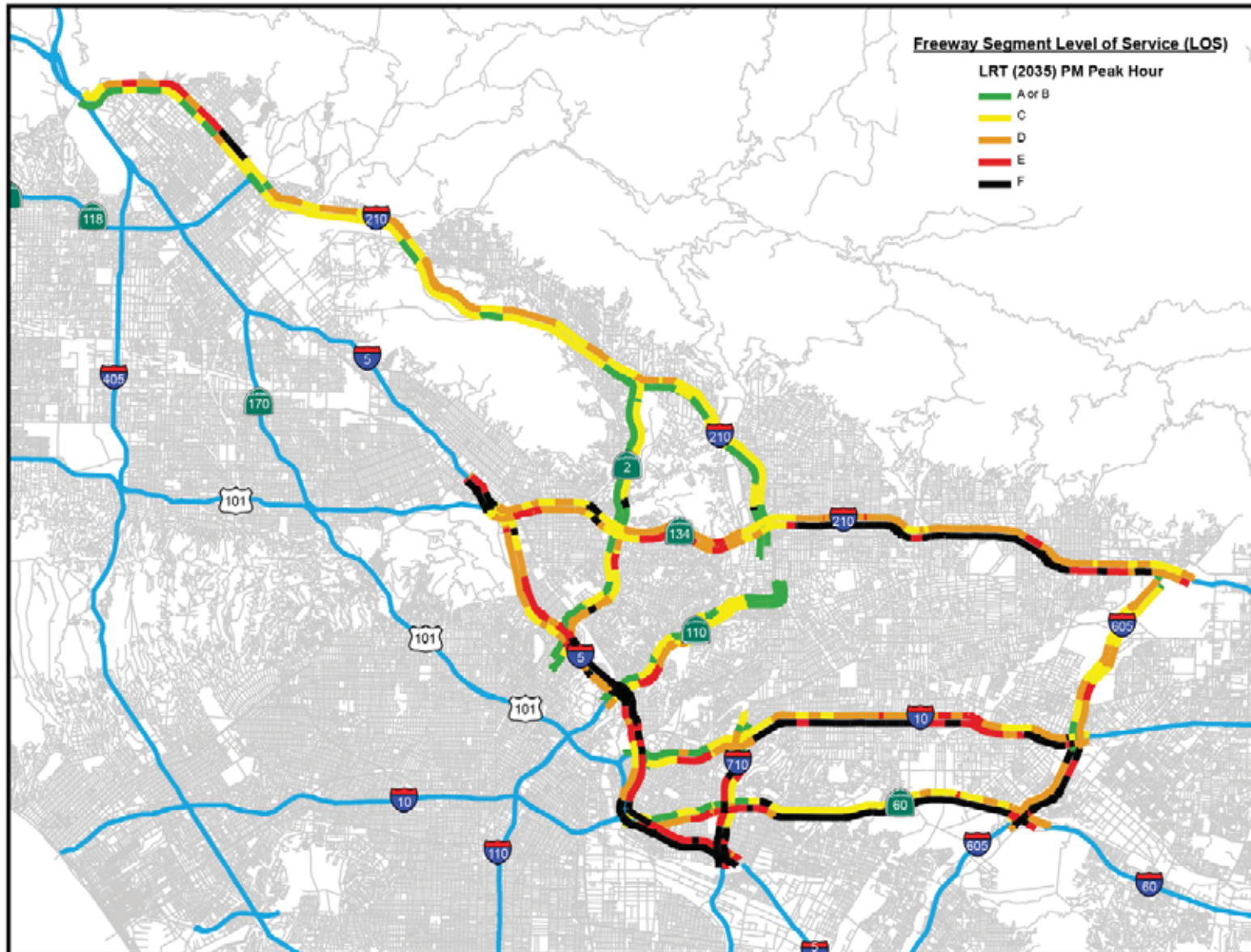


FIGURE 5-57
 Horizon Year (2035 PM) Freeway LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

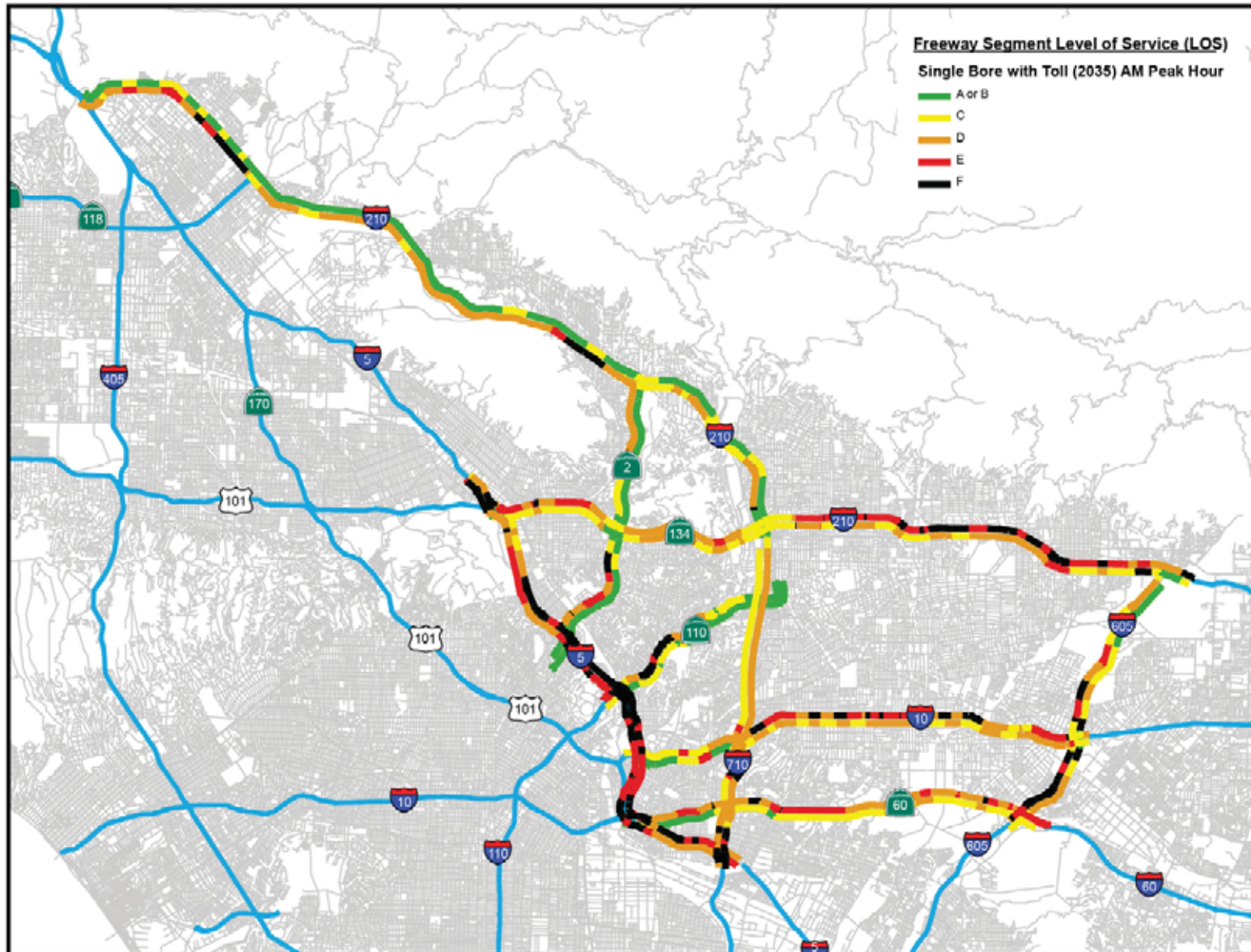


FIGURE 5-58
 Horizon Year (2035 AM) Freeway LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

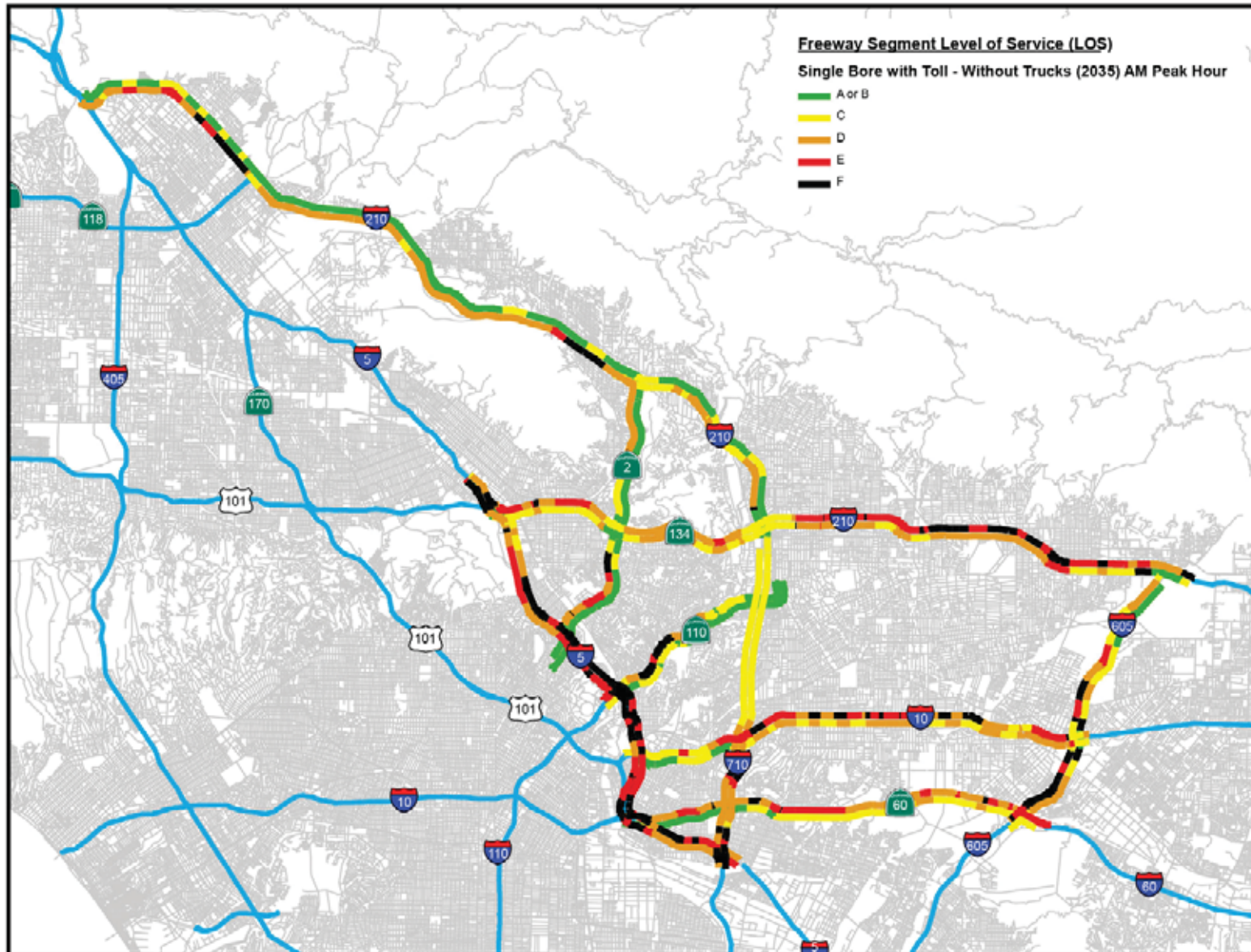


FIGURE 5-60
 Horizon Year (2035 AM) Freeway LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

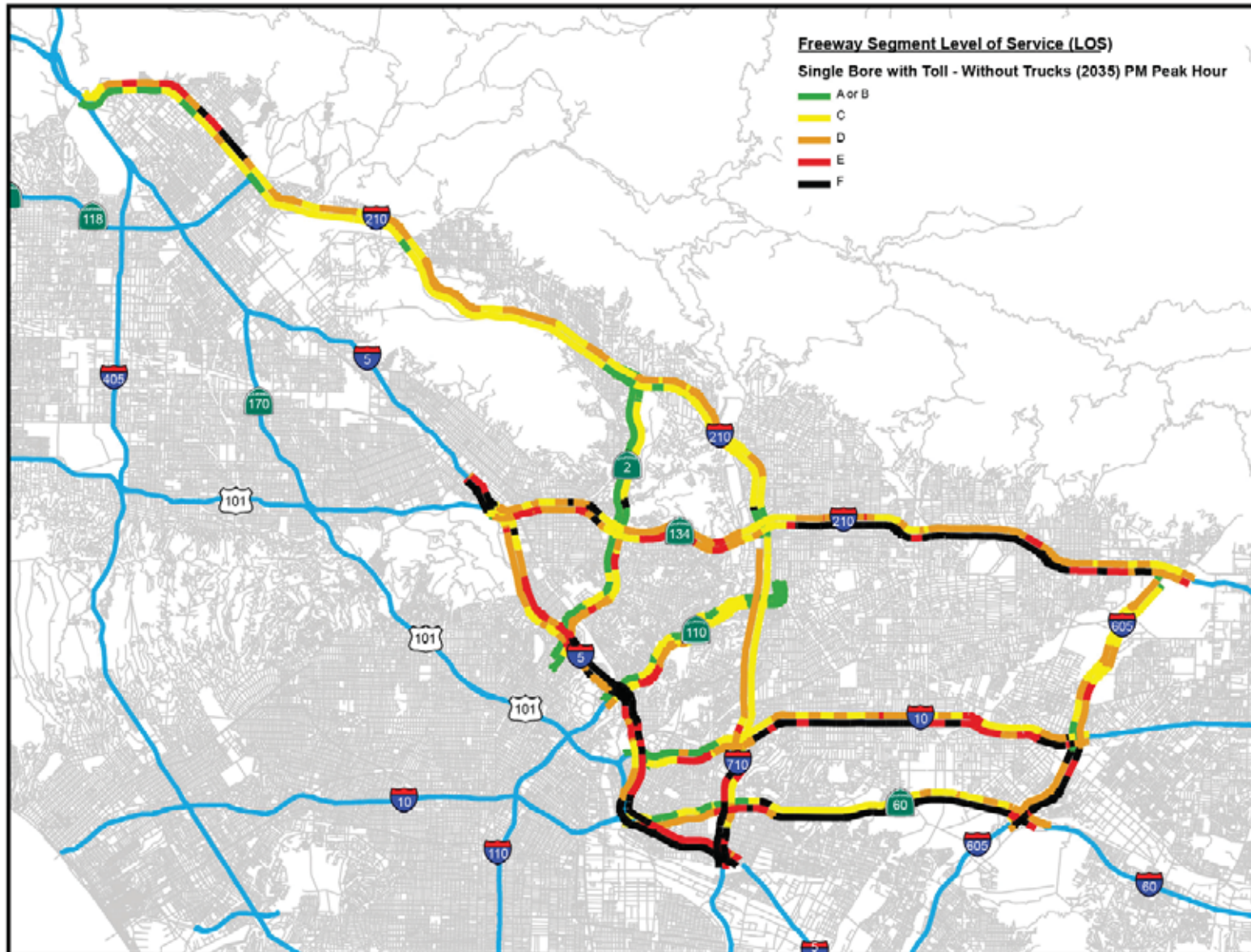


FIGURE 5-61
 Horizon Year (2035 PM) Freeway LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

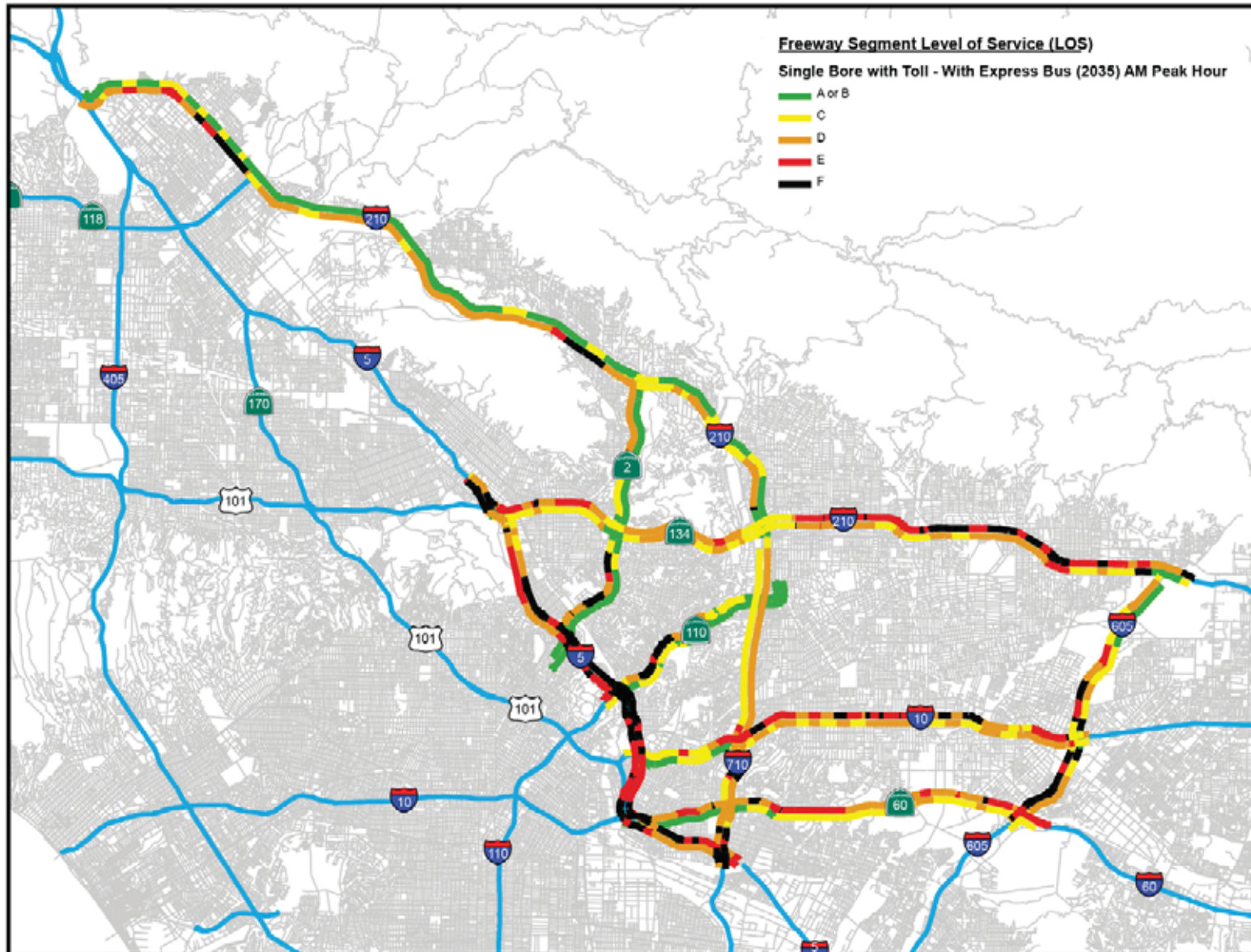


FIGURE 5-62
 Horizon Year (2035 AM) Freeway LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

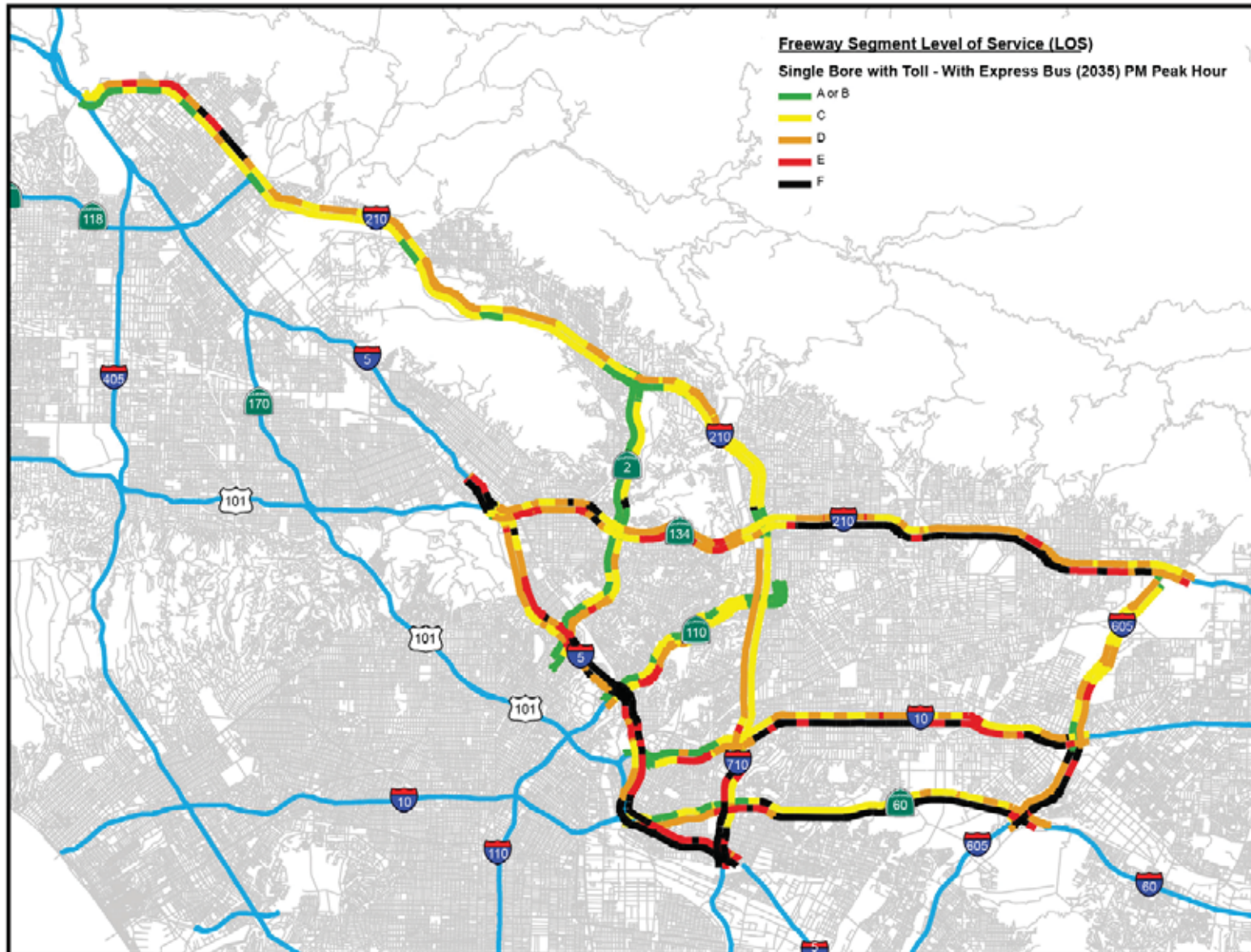


FIGURE 5-63
 Horizon Year (2035 PM) Freeway LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

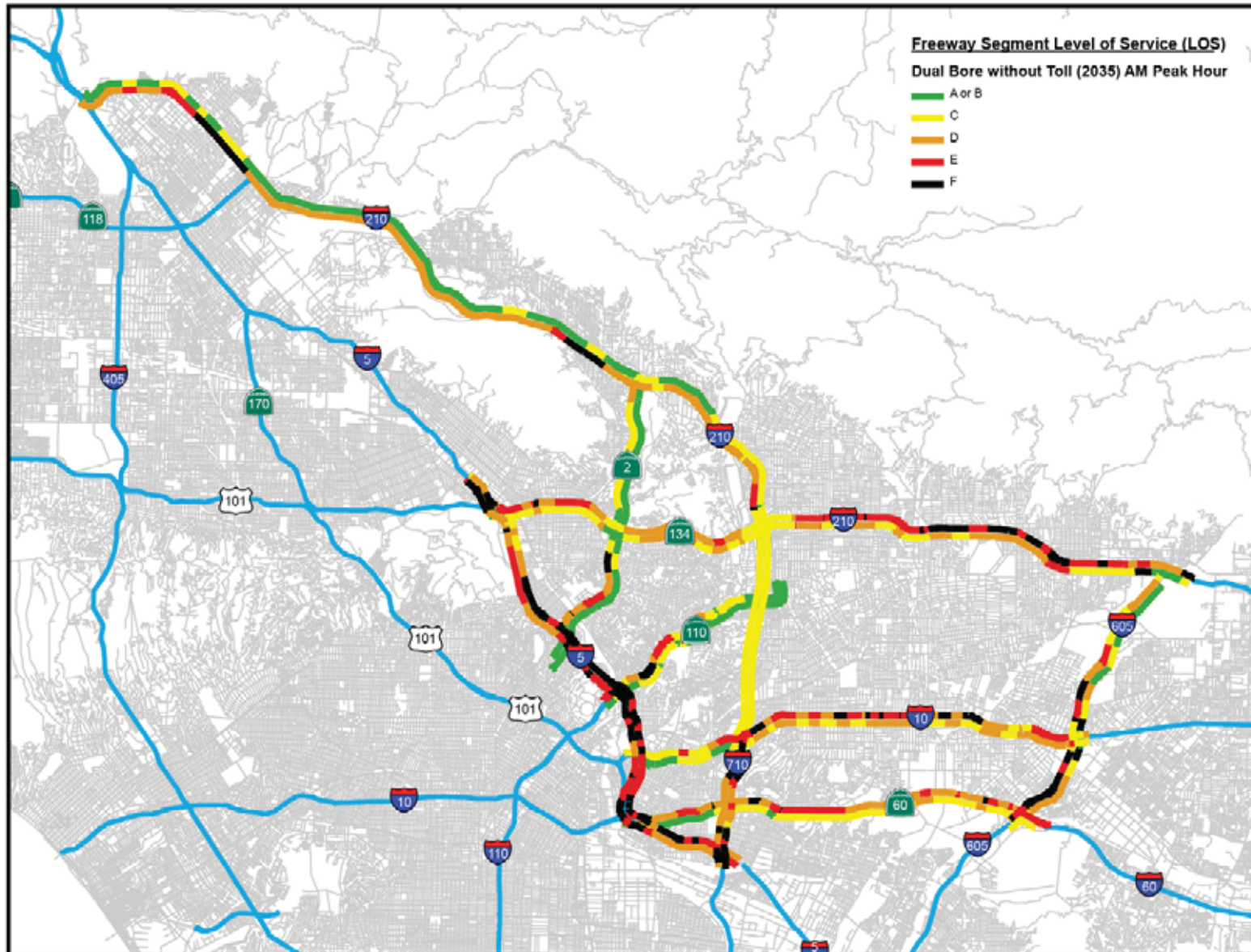


FIGURE 5-64
 Horizon Year (2035 AM) Freeway LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

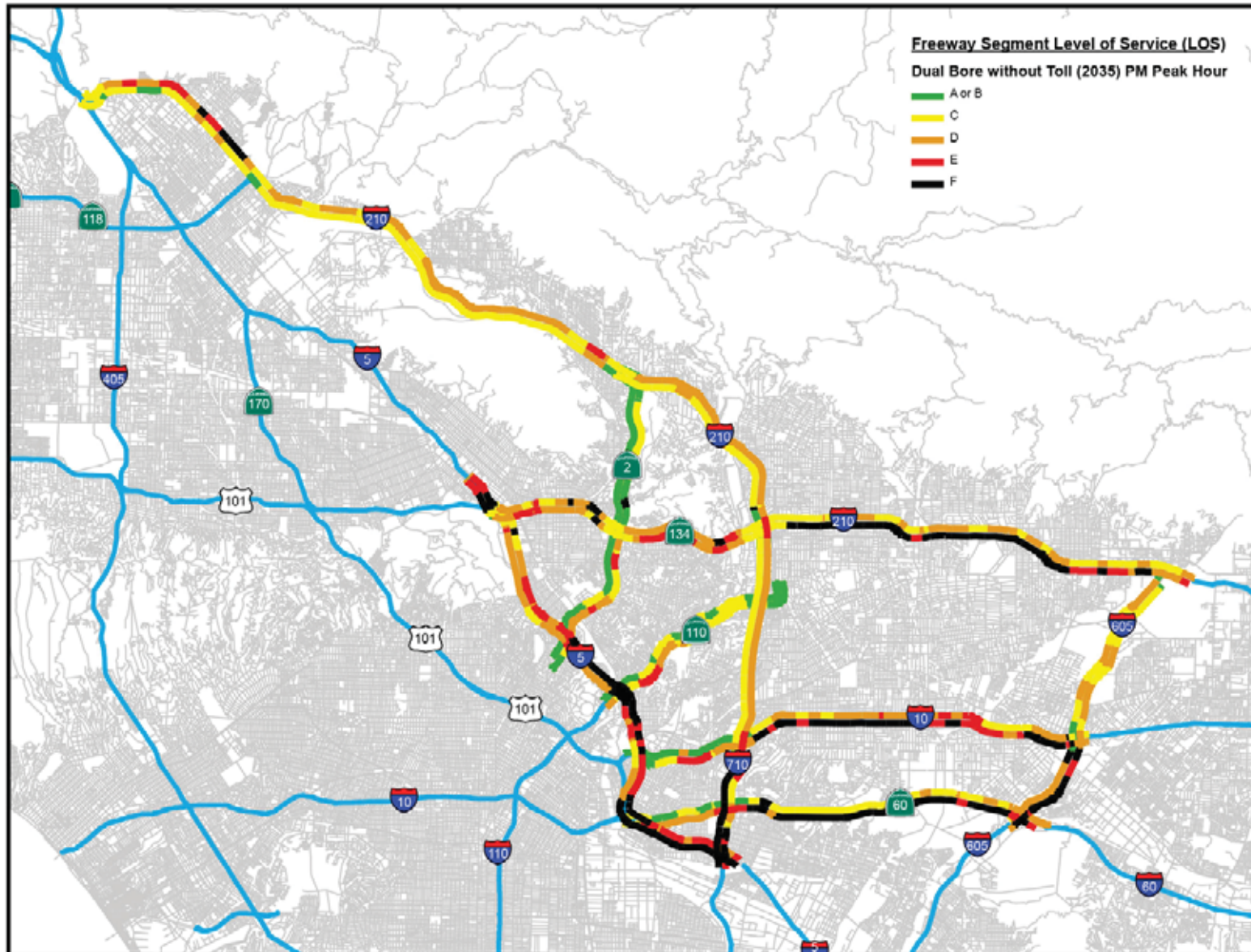


FIGURE 5-65
 Horizon Year (2035 PM) Freeway LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

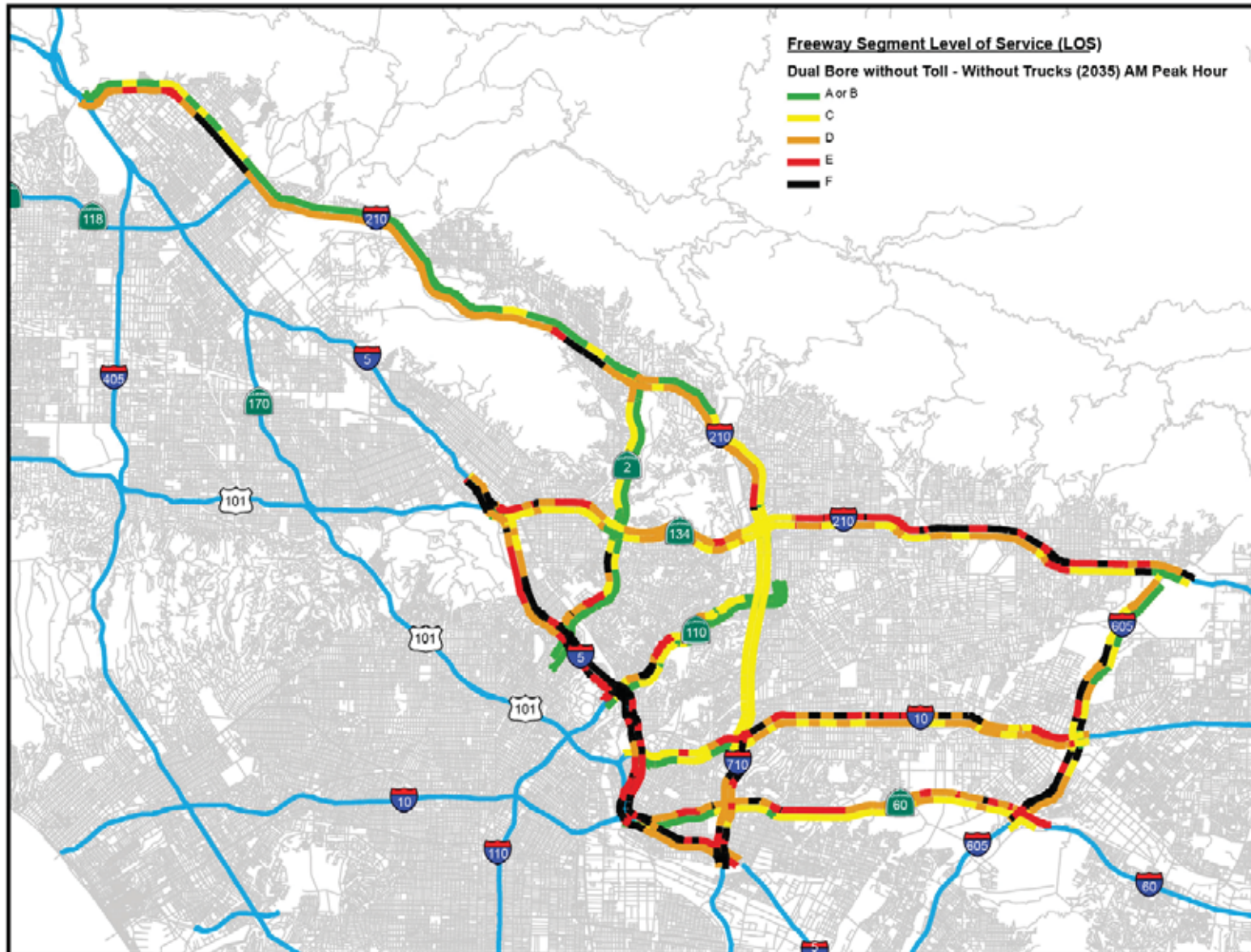


FIGURE 5-66
 Horizon Year (2035 AM) Freeway LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

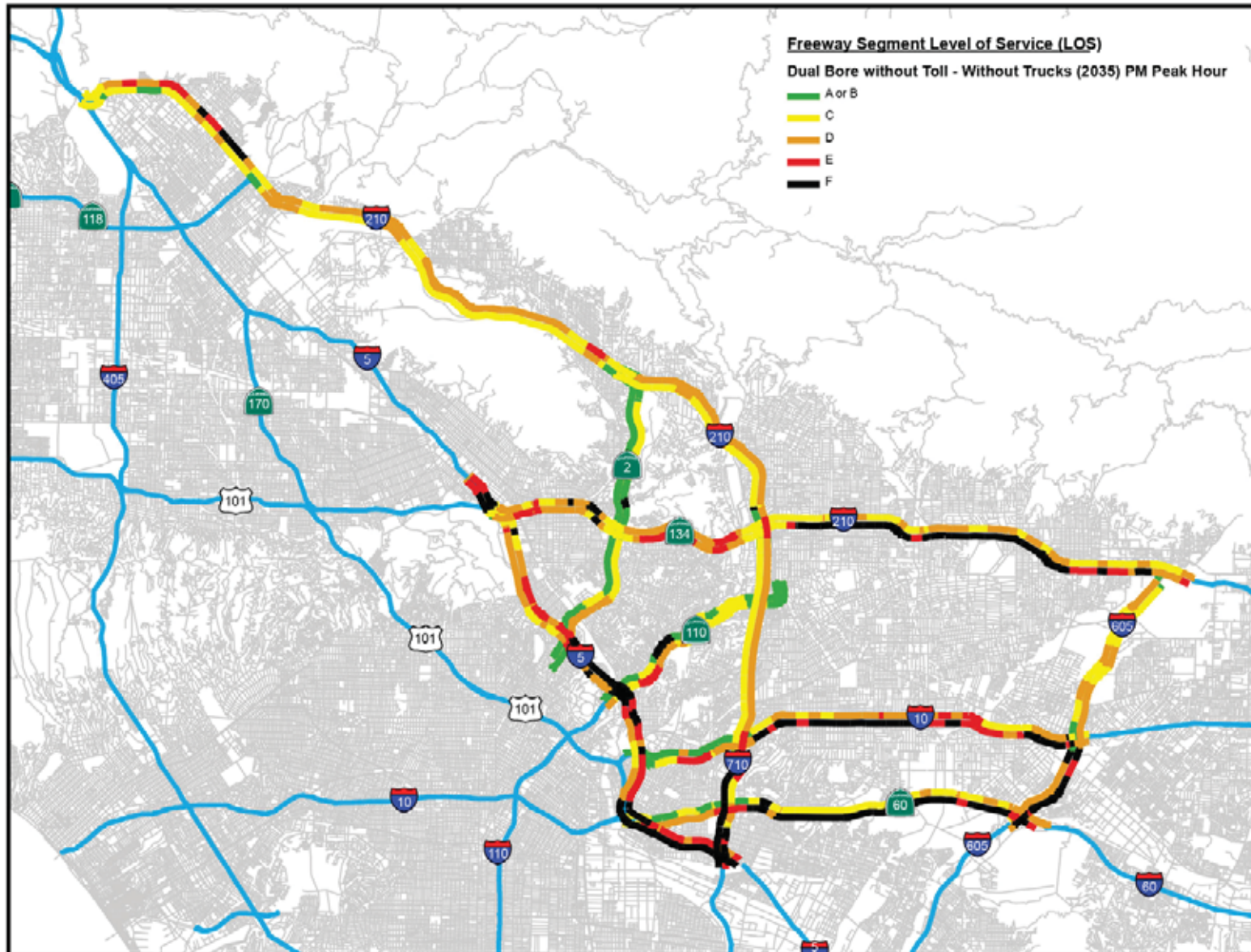


FIGURE 5-67
 Horizon Year (2035 PM) Freeway LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

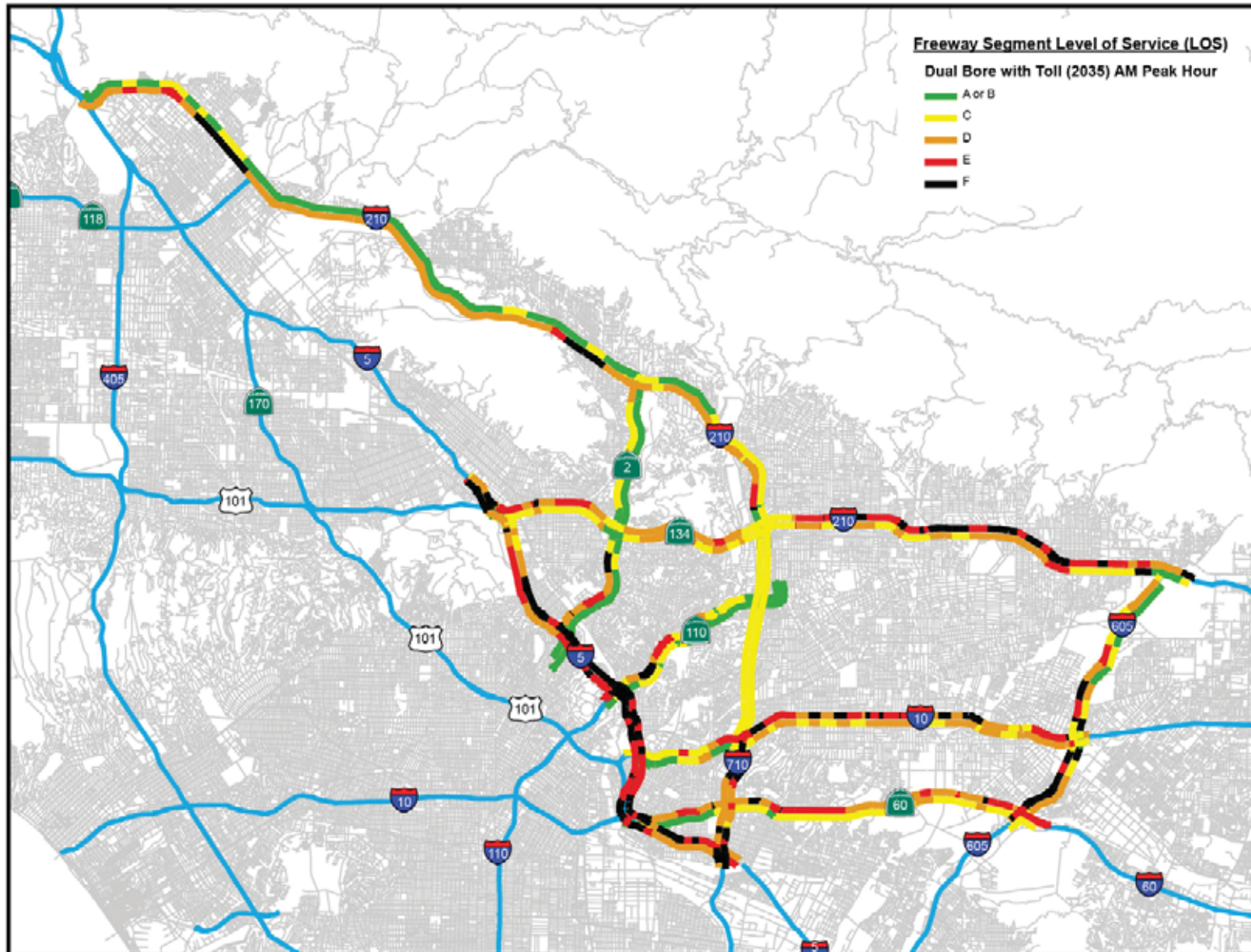


FIGURE 5-68
 Horizon Year (2035 AM) Freeway LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

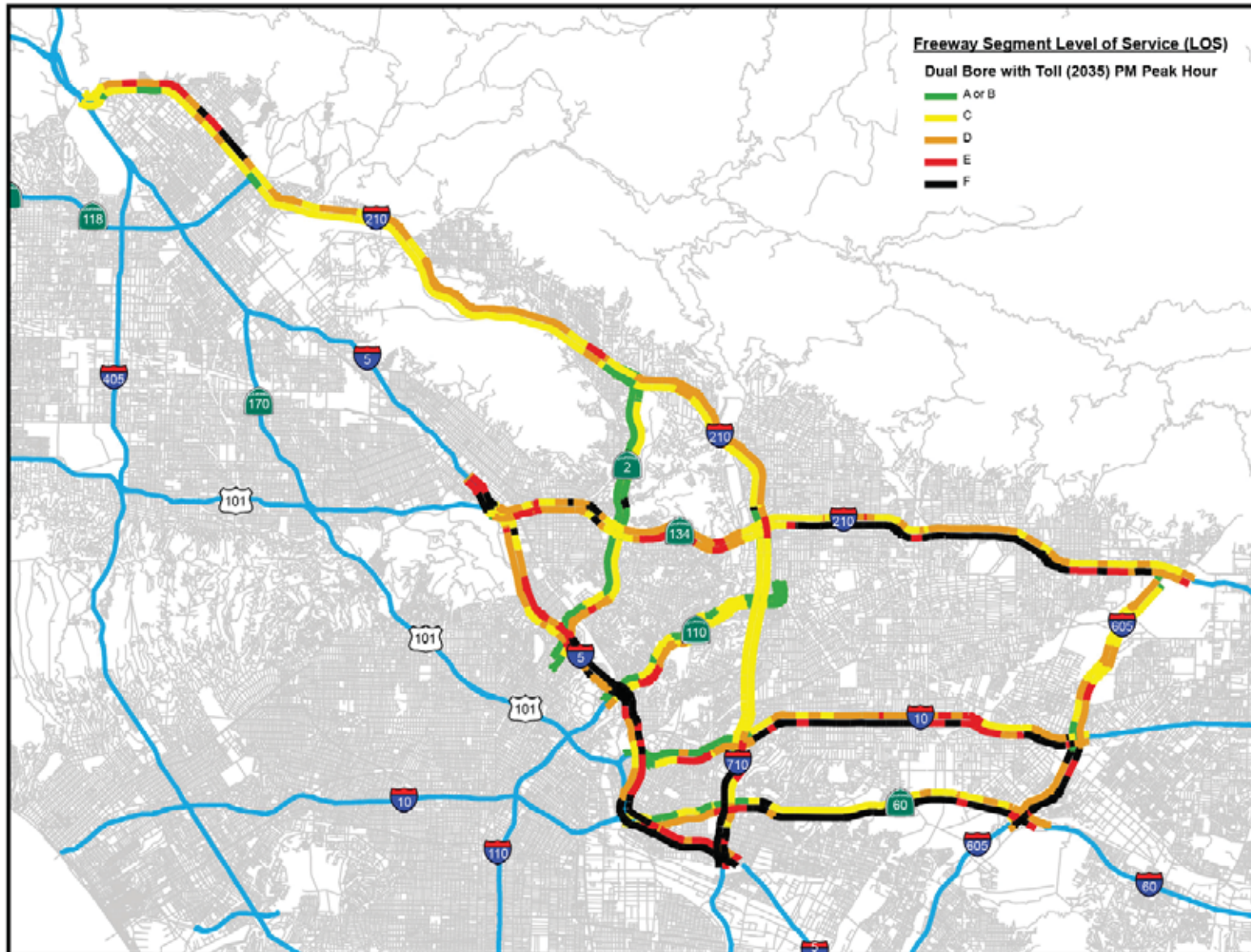


FIGURE 5-69
 Horizon Year (2035 PM) Freeway LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

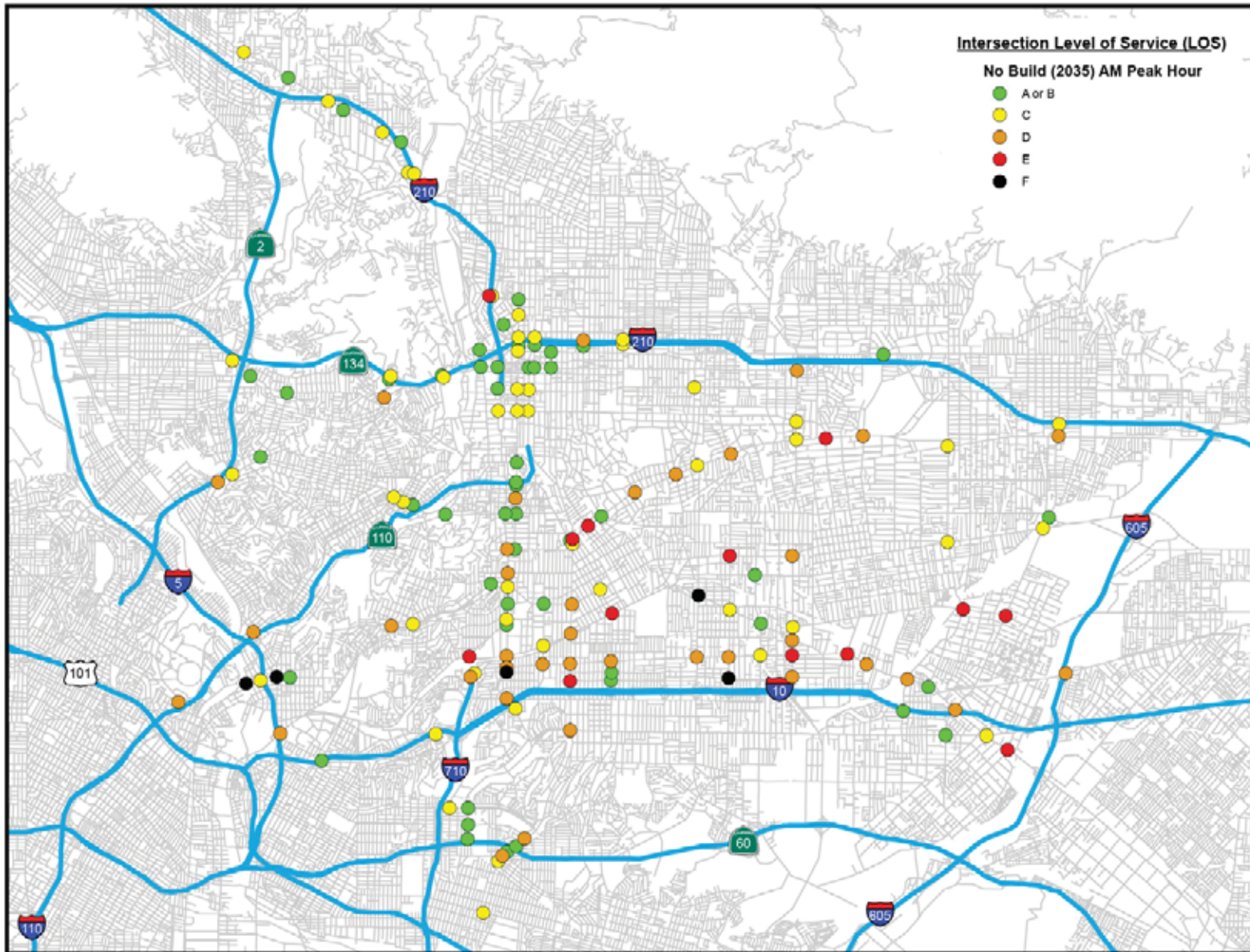


FIGURE 5-70
 Horizon Year (2035 AM) Intersection LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

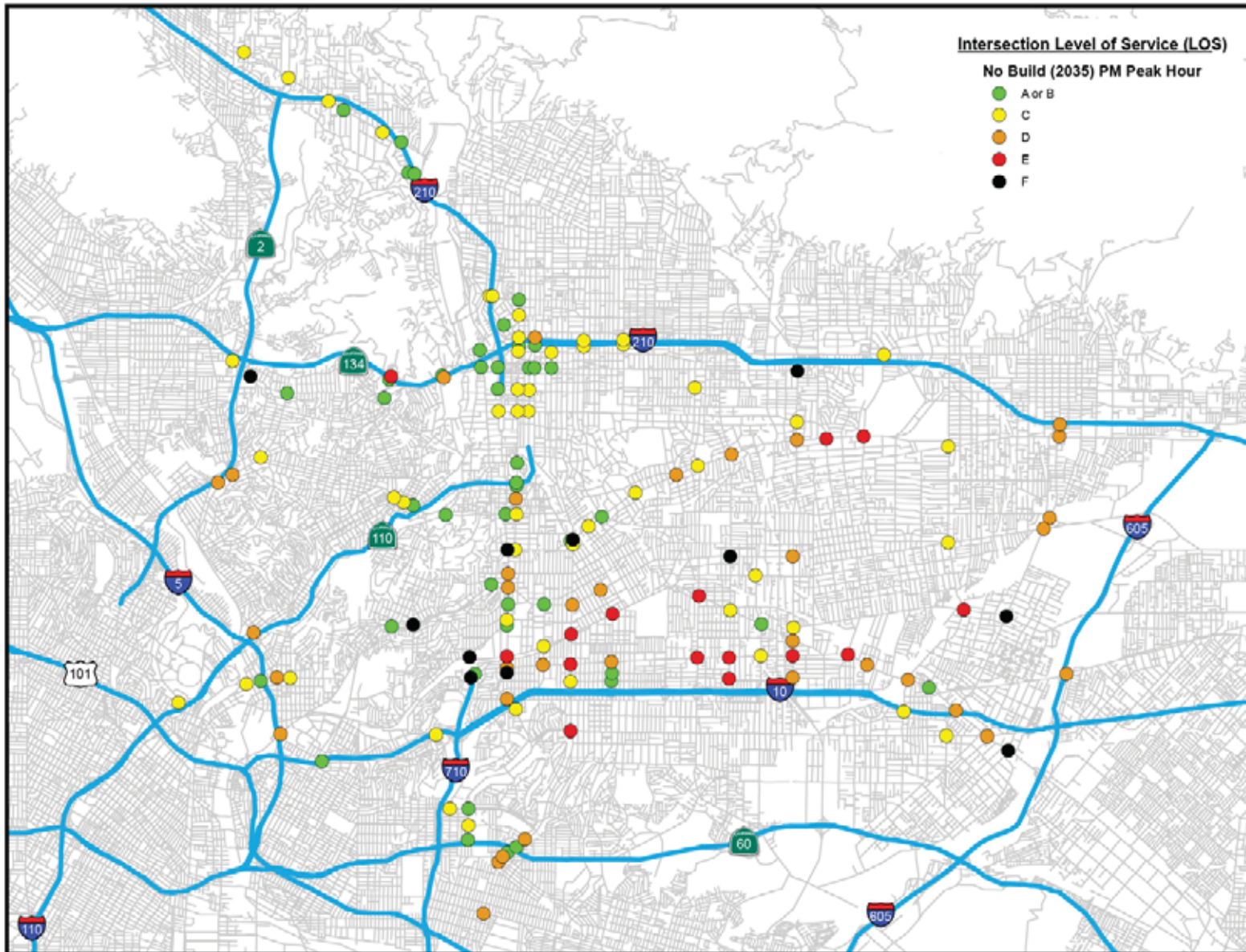


FIGURE 5-71
 Horizon Year (2035 PM) Intersection LOS -
 No Build
 SR 710 North Study
 Los Angeles County, California

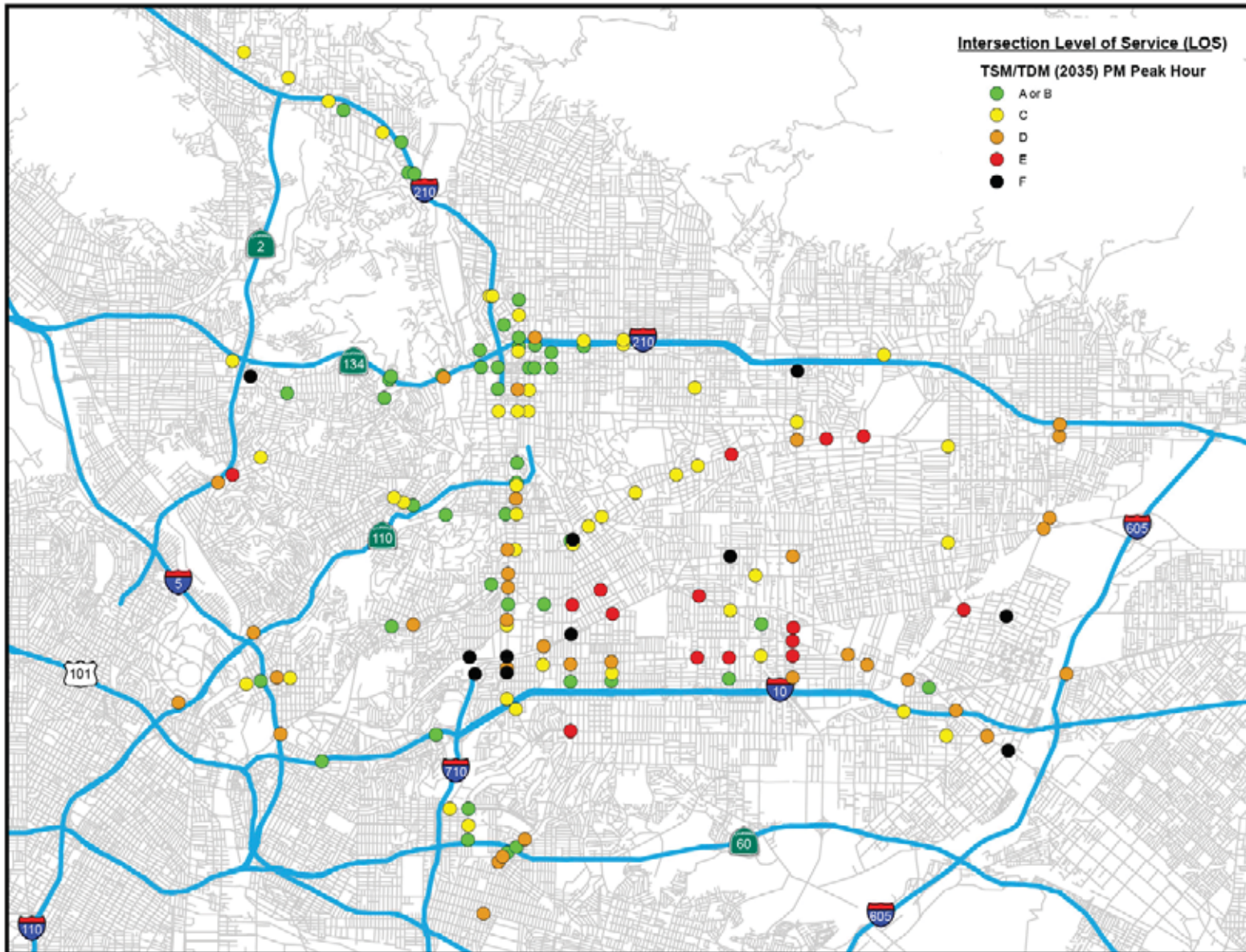


FIGURE 5-73
 Horizon Year (2035 PM) Intersection LOS -
 TSM/TDM
 SR 710 North Study
 Los Angeles County, California

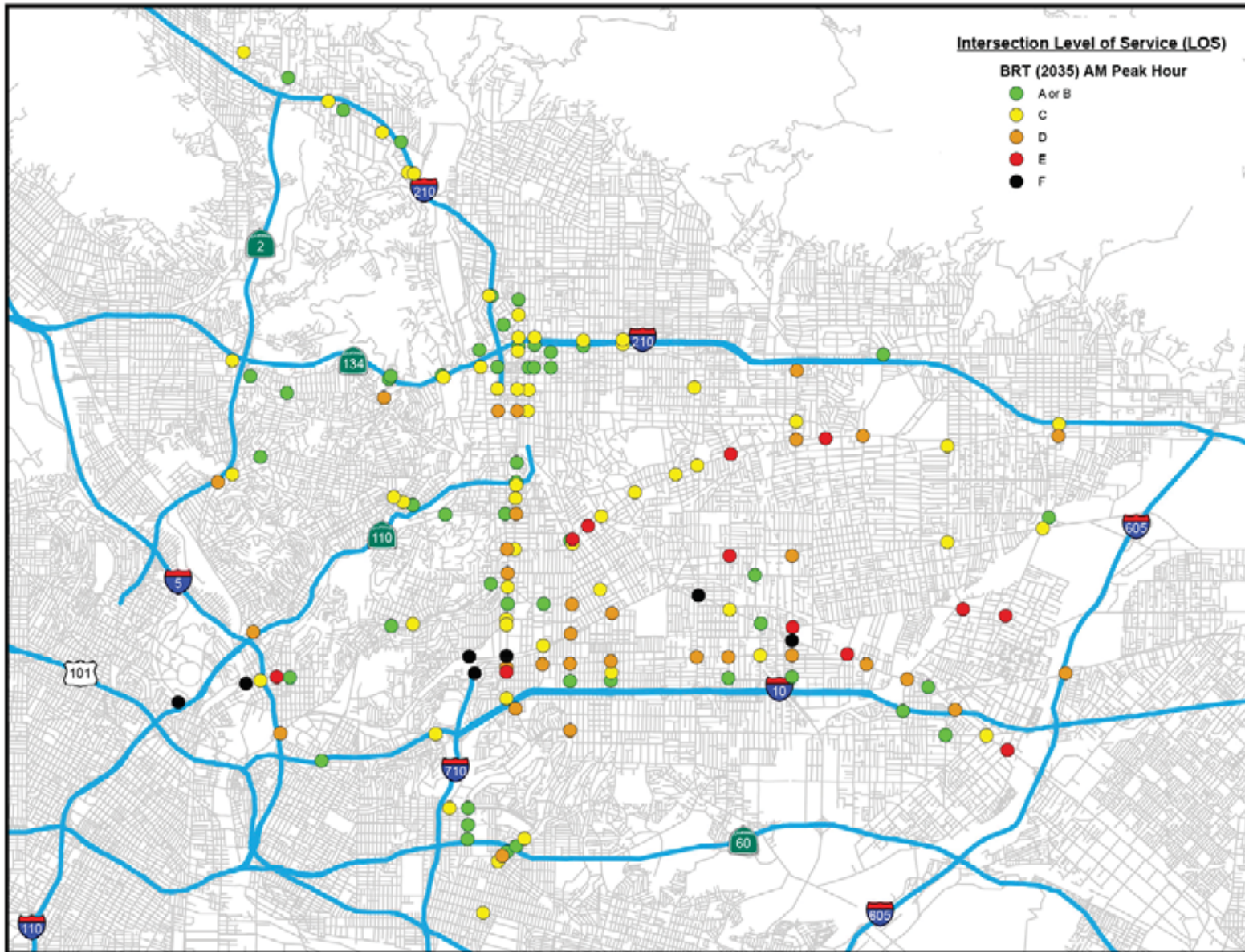


FIGURE 5-74
 Horizon Year (2035 AM) Intersection LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

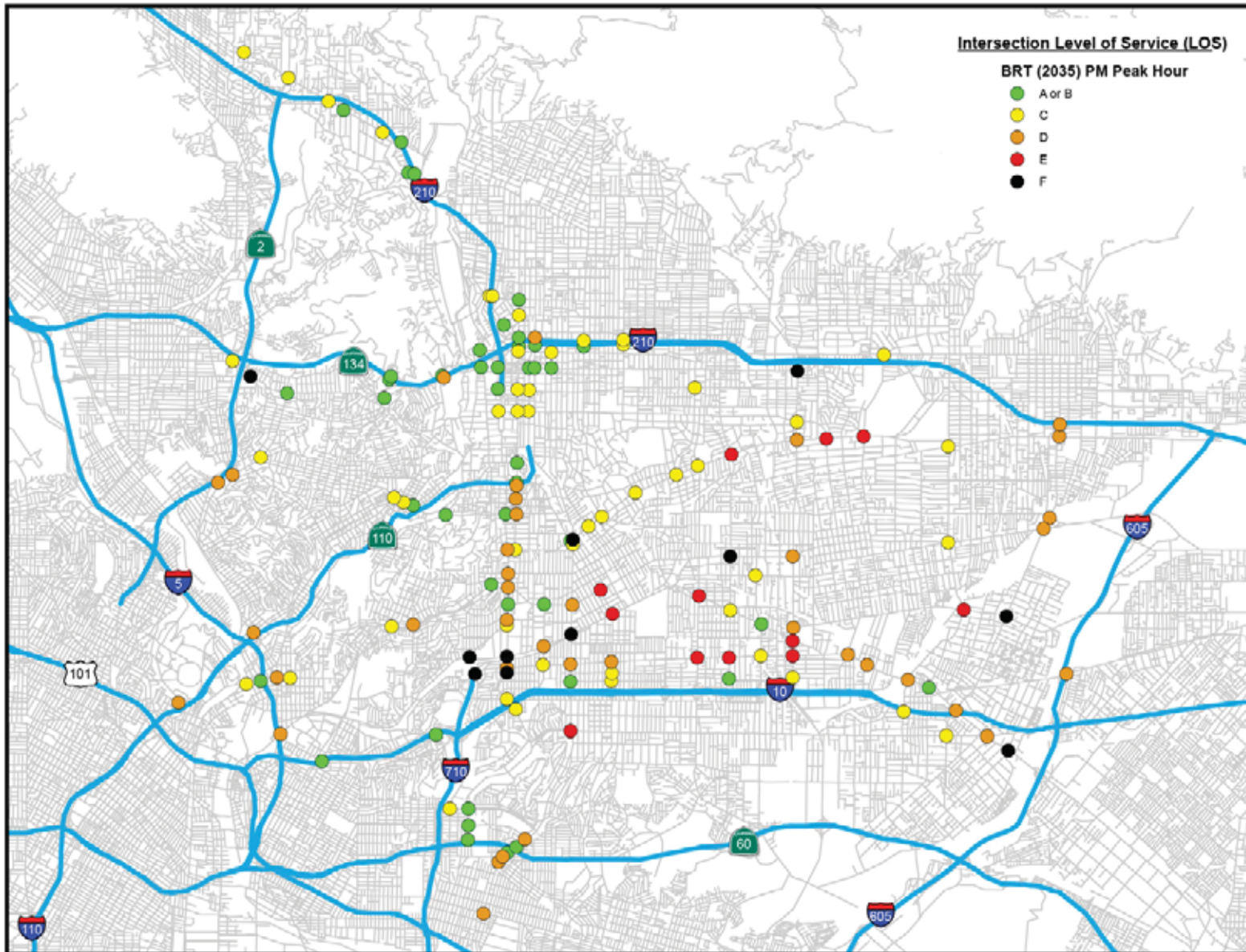


FIGURE 5-75
 Horizon Year (2035 PM) Intersection LOS -
 BRT
 SR 710 North Study
 Los Angeles County, California

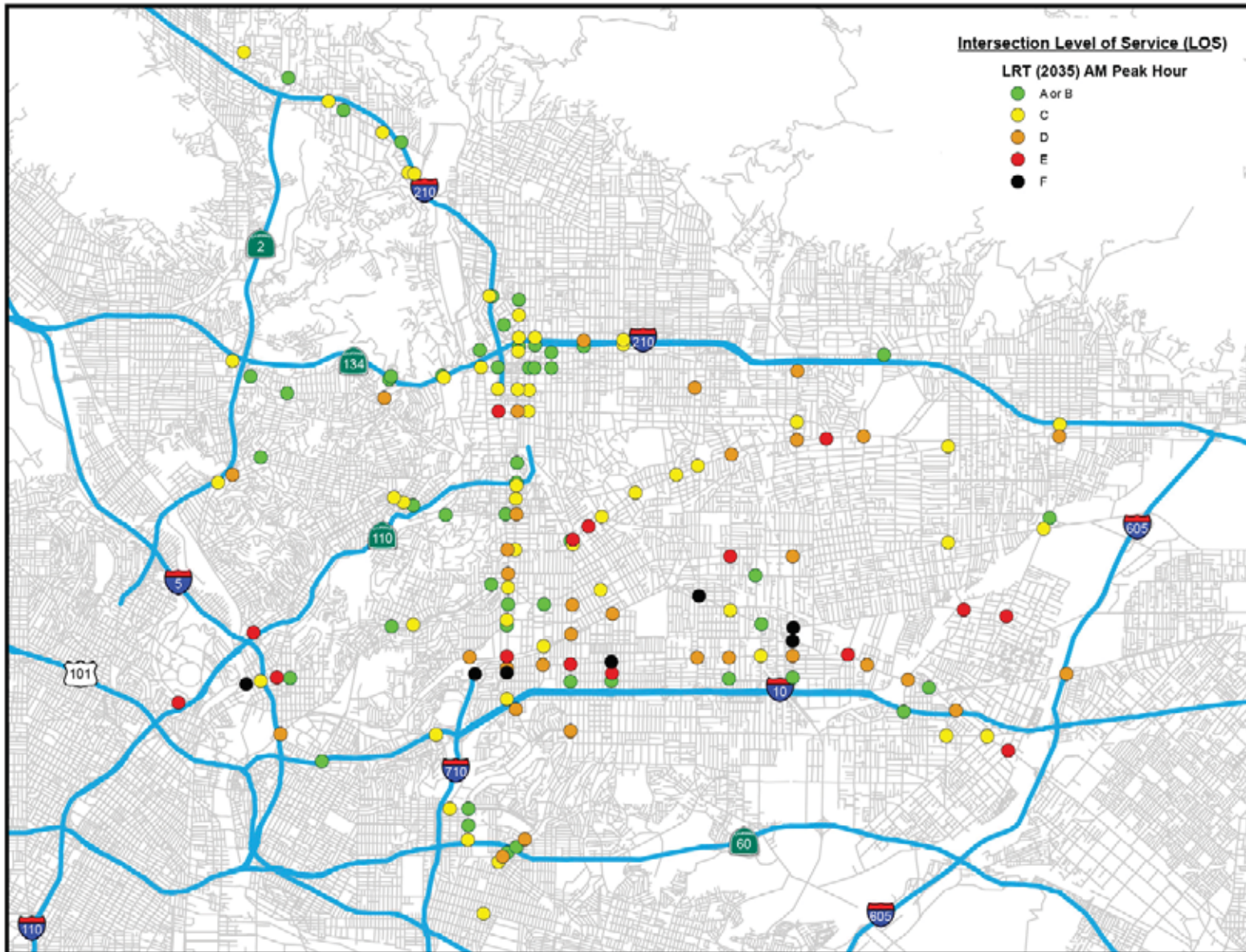


FIGURE 5-76
 Horizon Year (2035 AM) Intersection LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

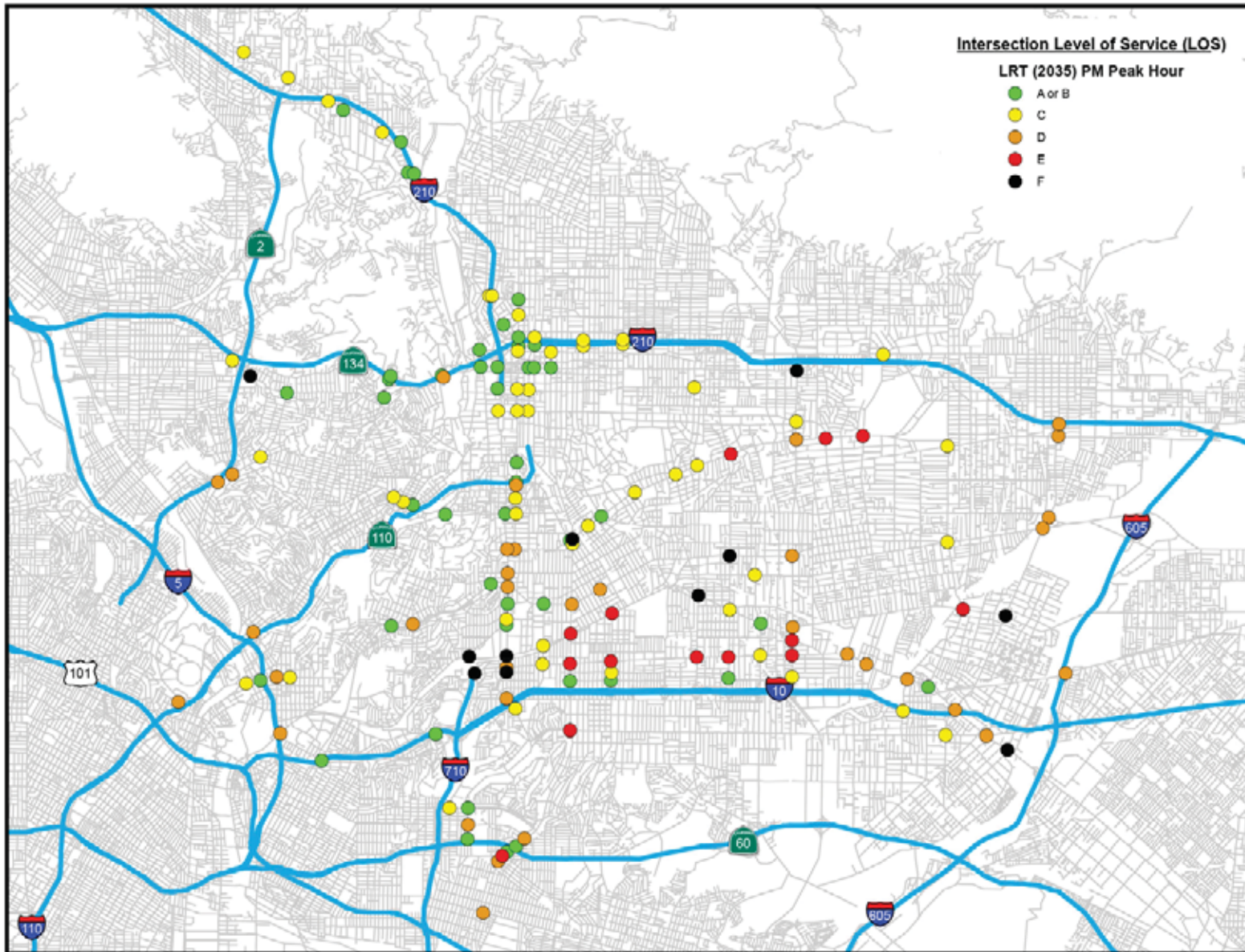


FIGURE 5-77
 Horizon Year (2035 PM) Intersection LOS -
 LRT
 SR 710 North Study
 Los Angeles County, California

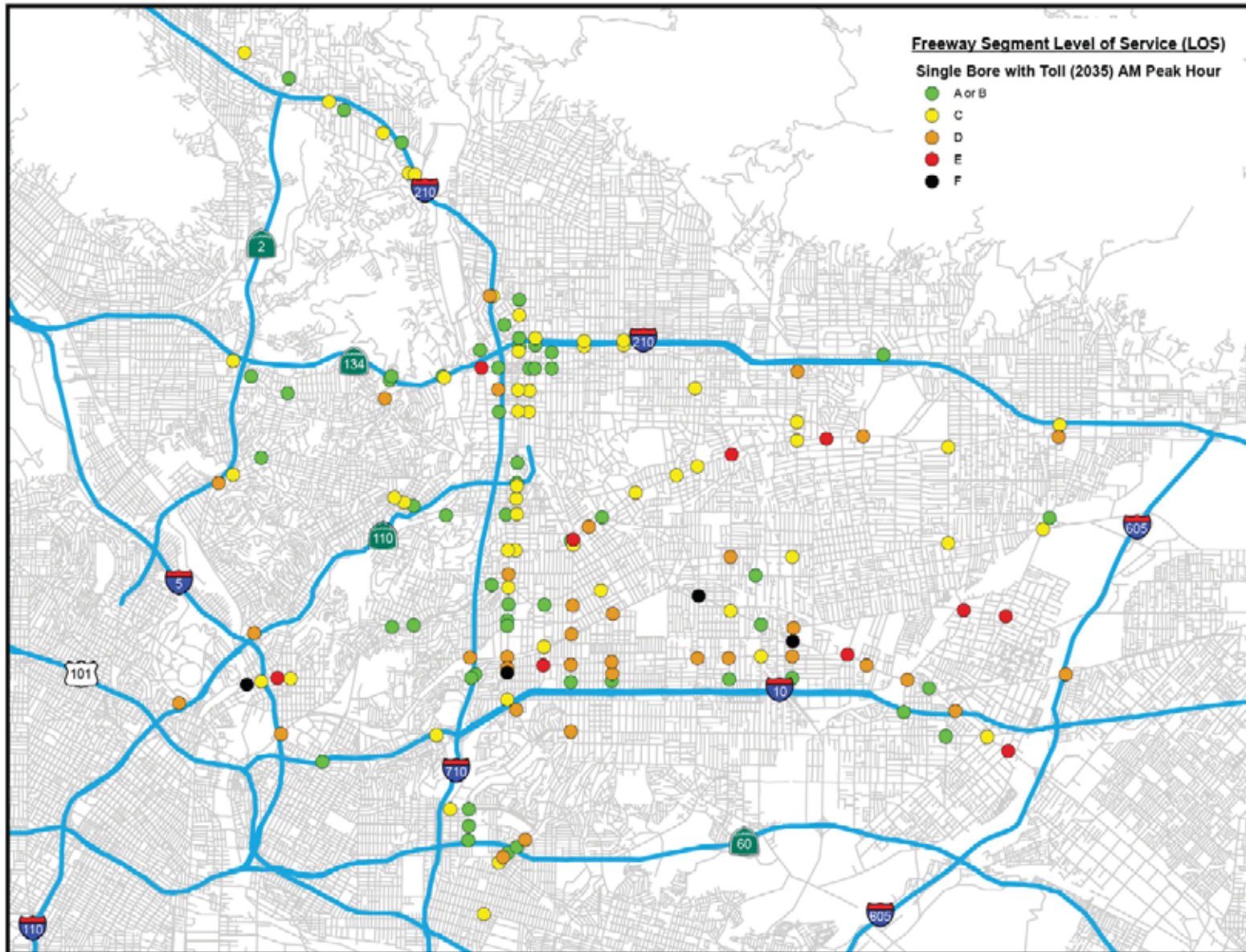


FIGURE 5-78
 Horizon Year (2035 AM) Intersection LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

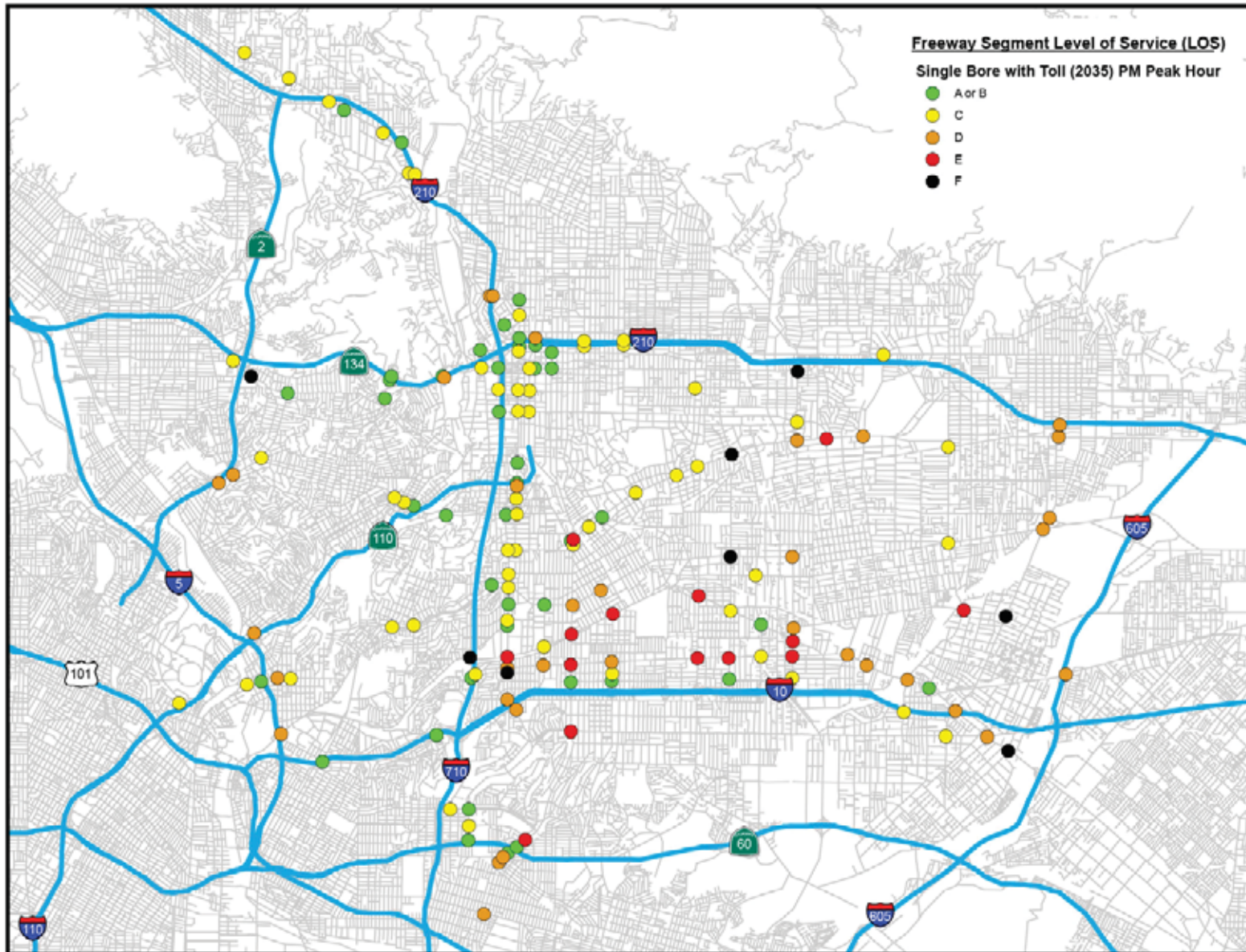


FIGURE 5-79
 Horizon Year (2035 PM) Intersection LOS -
 Single Bore with Toll
 SR 710 North Study
 Los Angeles County, California

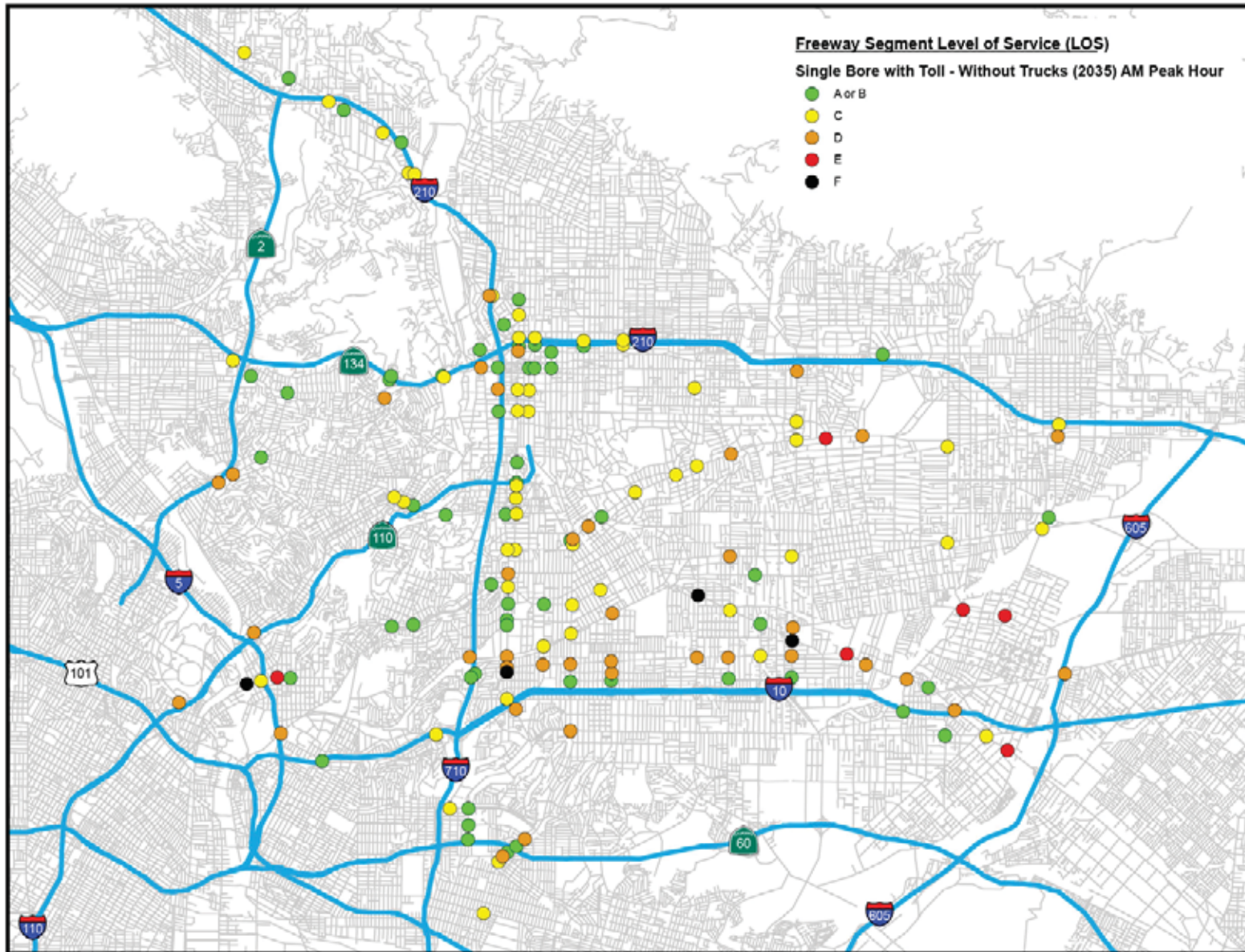


FIGURE 5-80
 Horizon Year (2035 AM) Intersection LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

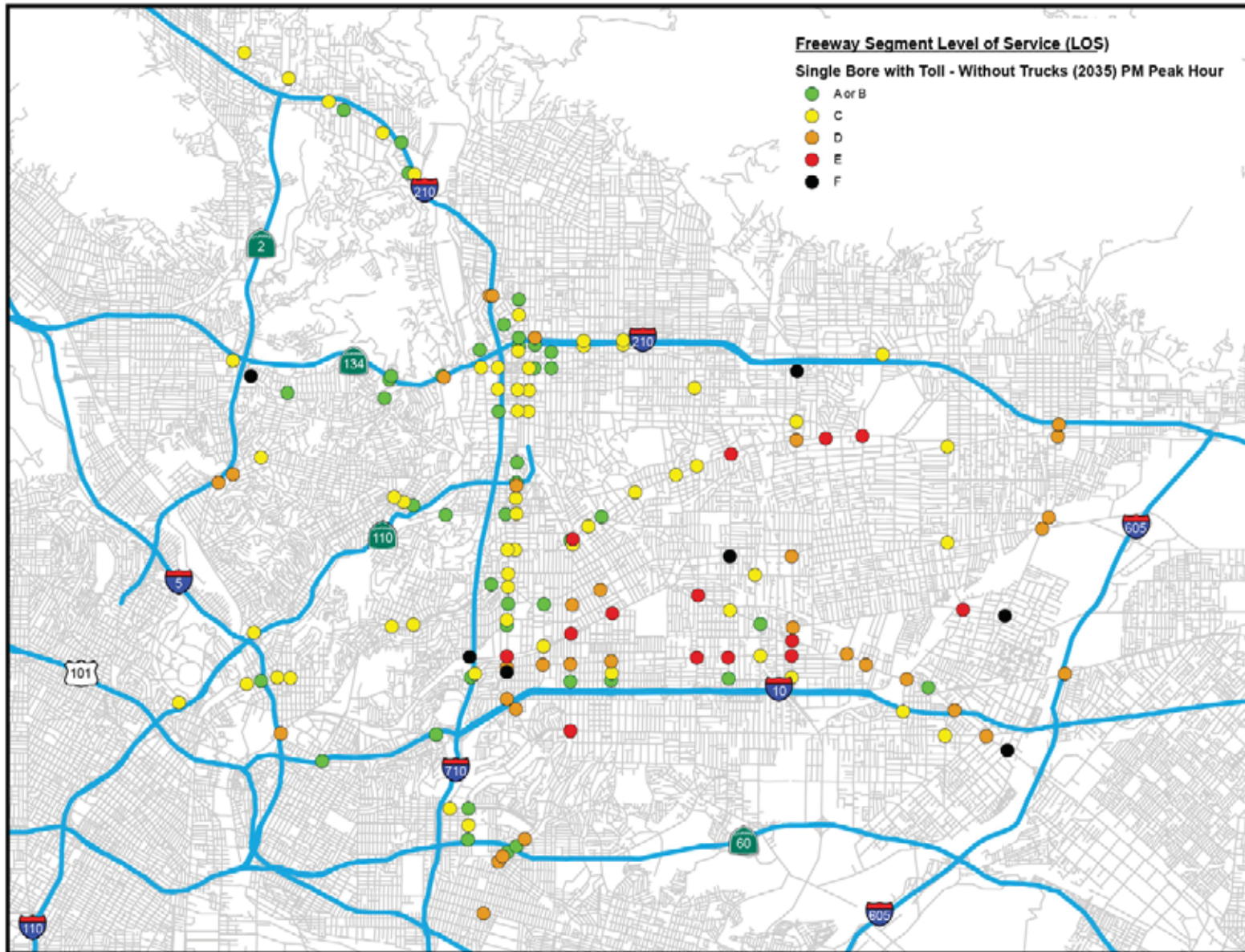


FIGURE 5-81
 Horizon Year (2035 PM) Intersection LOS -
 Single Bore with Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

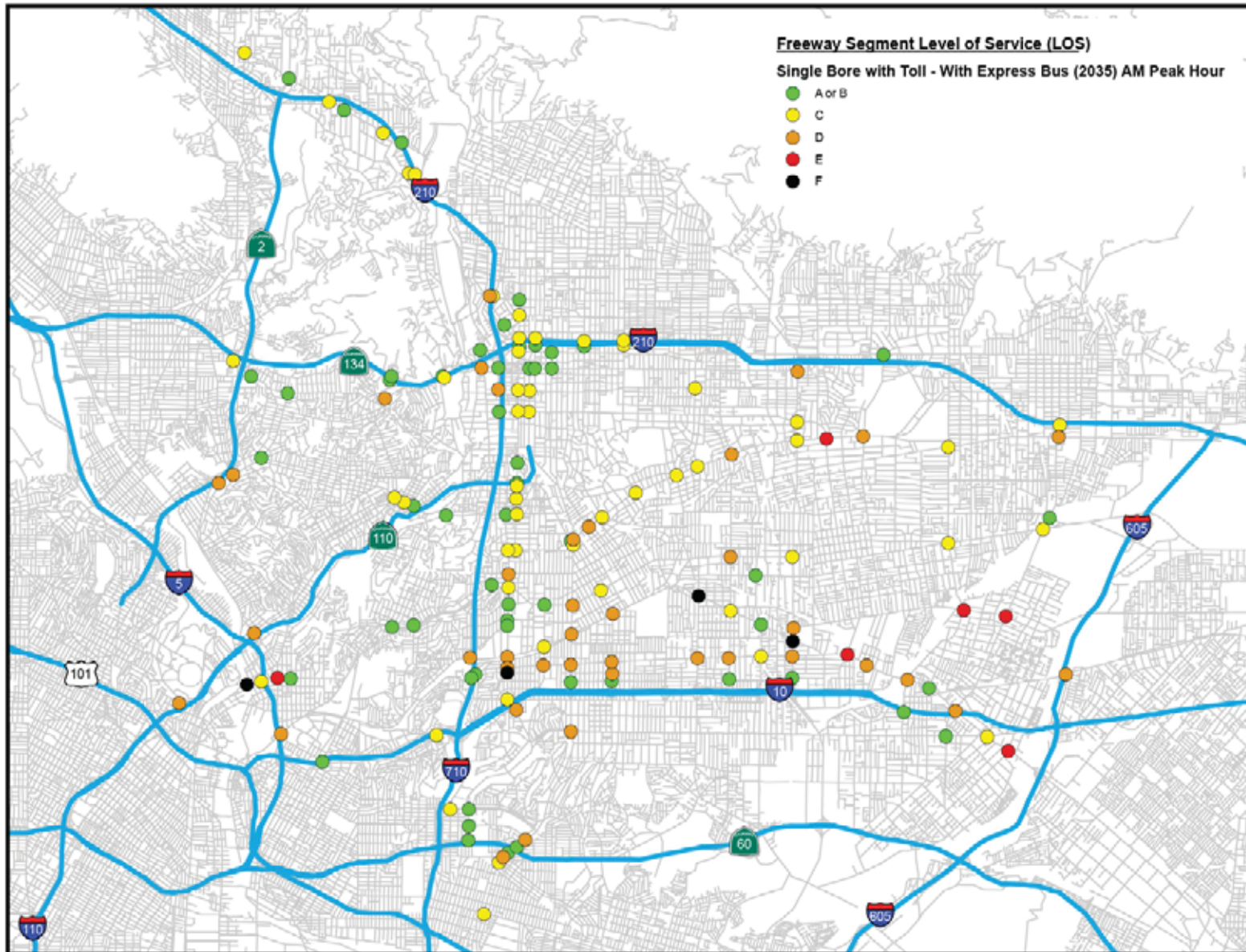


FIGURE 5-82
 Horizon Year (2035 AM) Intersection LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

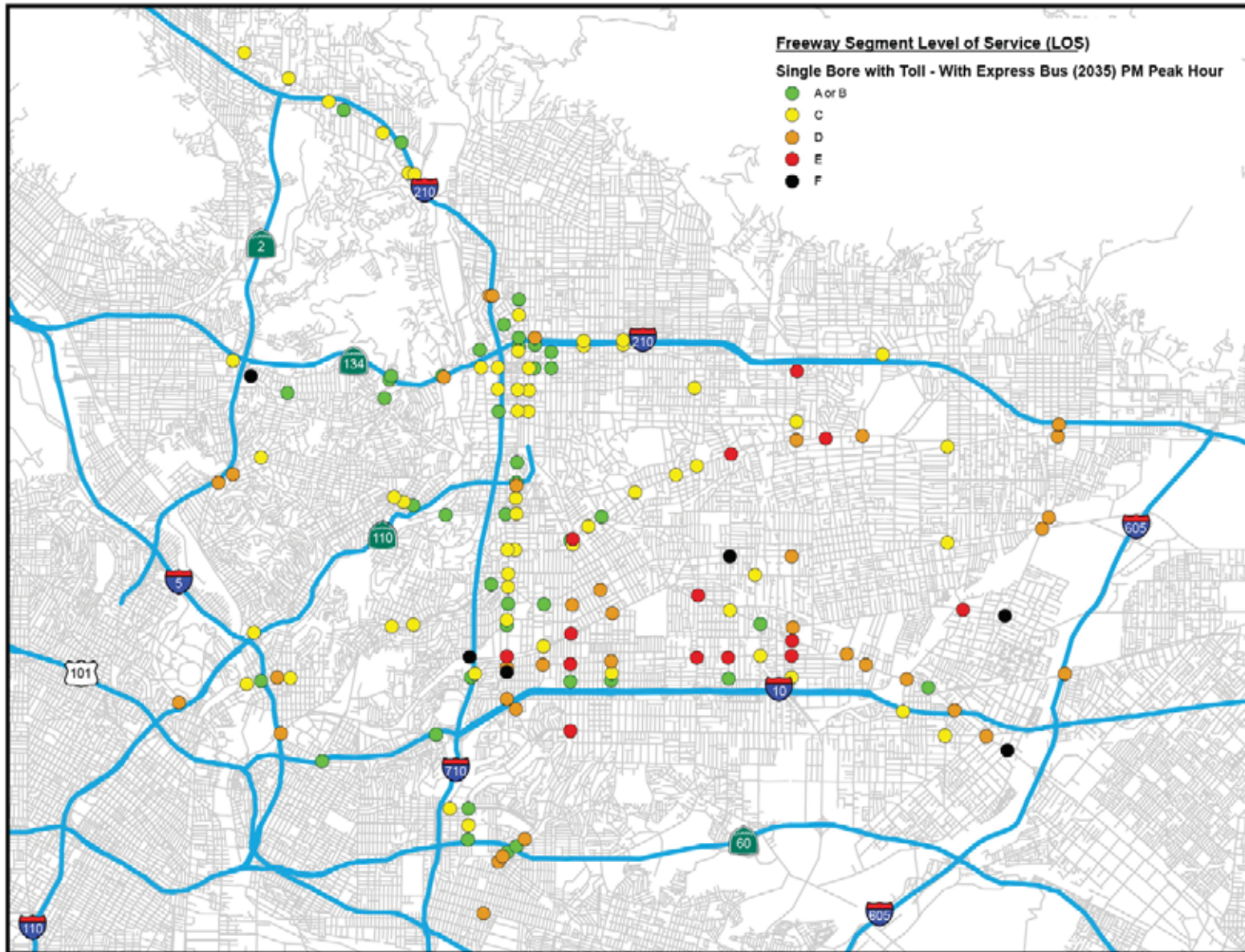


FIGURE 5-83
 Horizon Year (2035 PM) Intersection LOS -
 Single Bore with Toll with Express Bus
 SR 710 North Study
 Los Angeles County, California

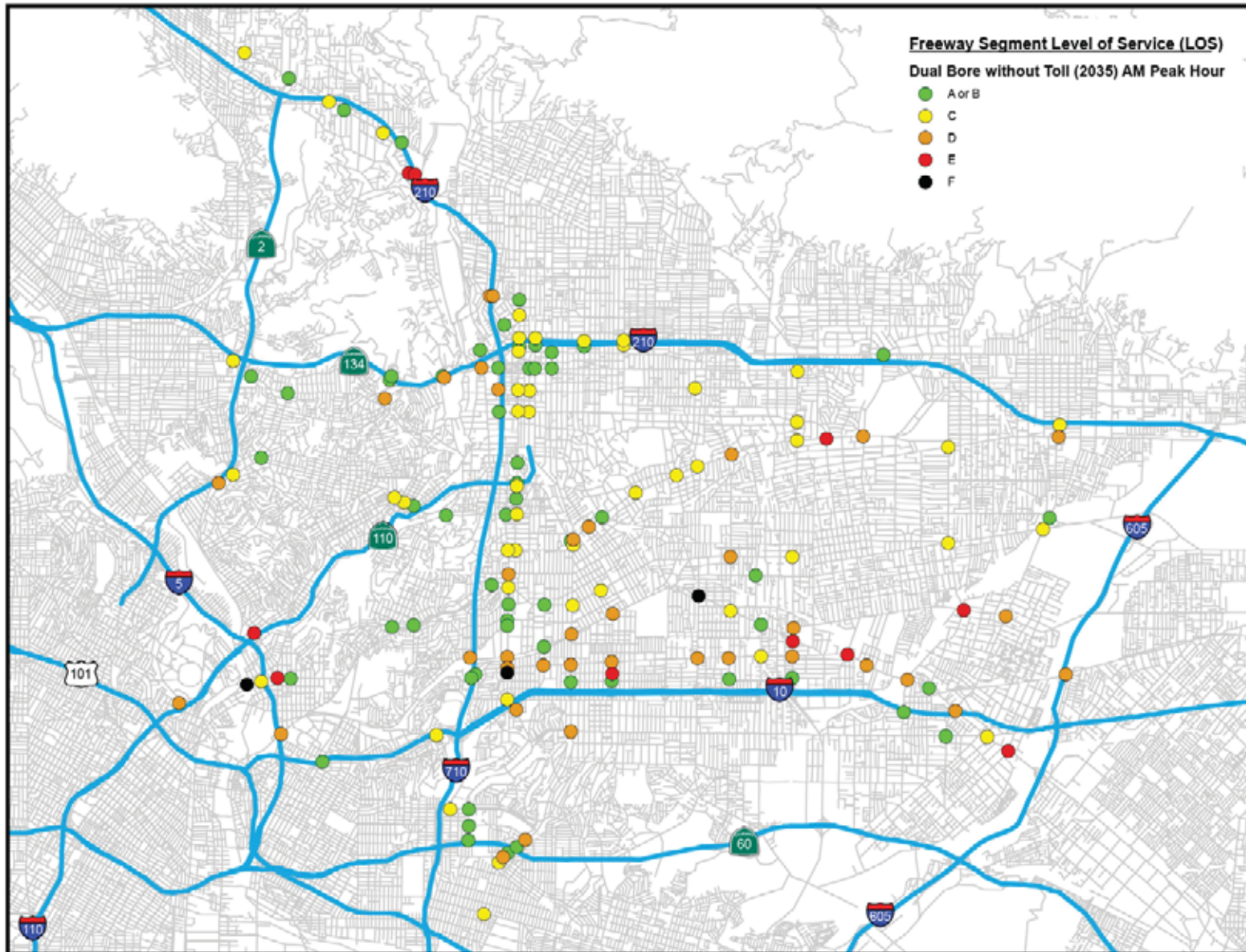


FIGURE 5-84
 Horizon Year (2035 AM) Intersection LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

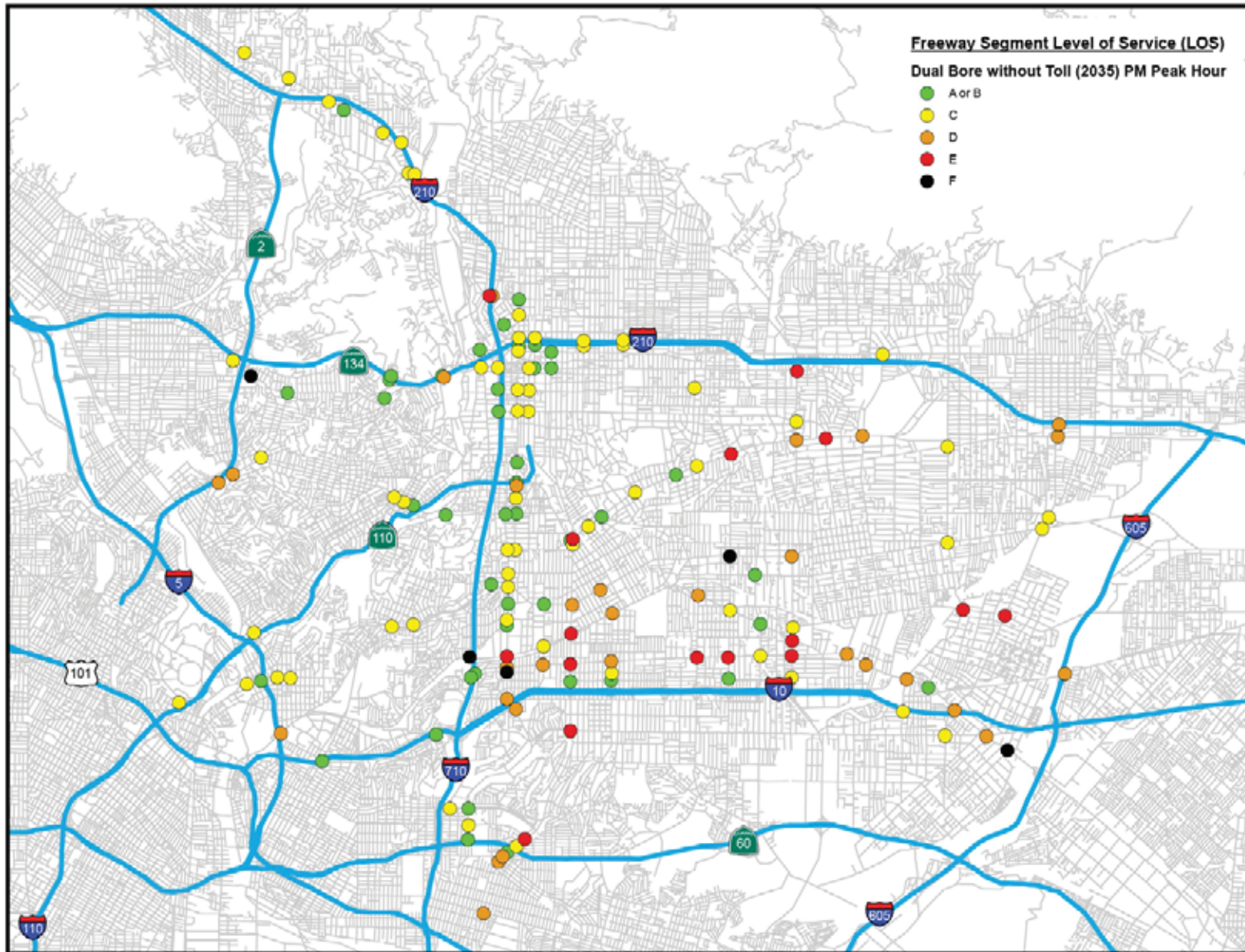


FIGURE 5-85
 Horizon Year (2035 PM) Intersection LOS -
 Dual Bore without Toll
 SR 710 North Study
 Los Angeles County, California

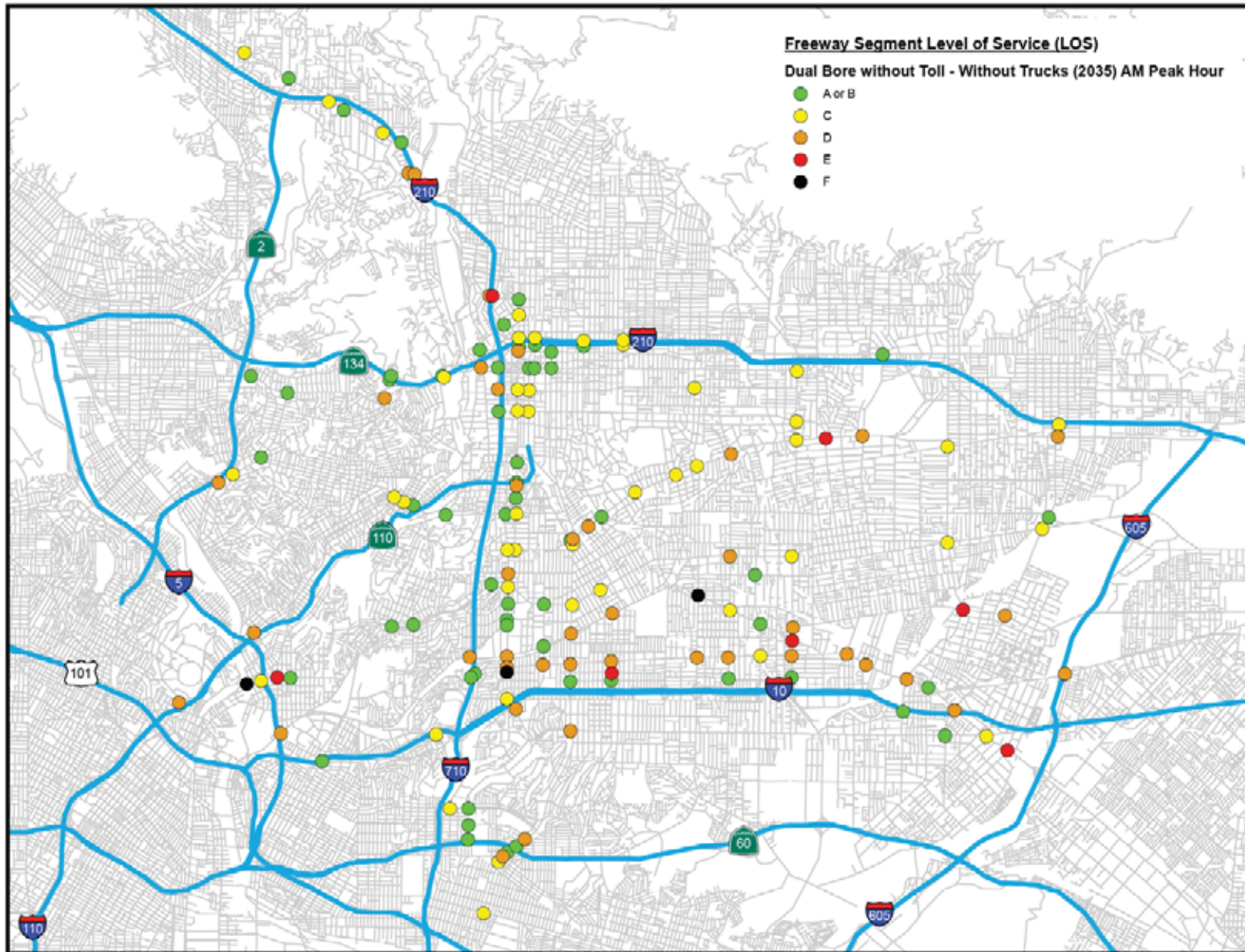


FIGURE 5-86
 Horizon Year (2035 AM) Intersection LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

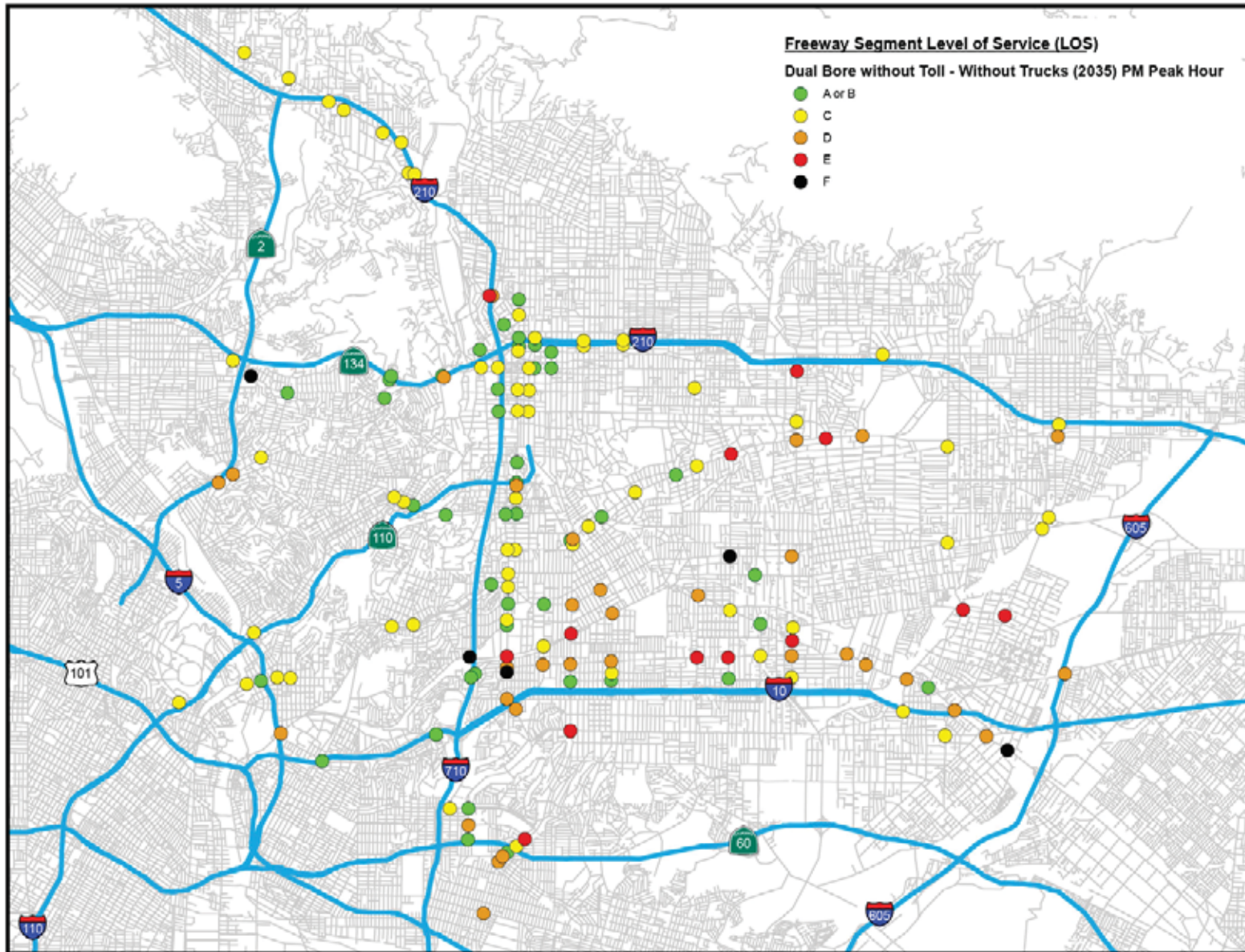


FIGURE 5-87
 Horizon Year (2035 PM) Intersection LOS -
 Dual Bore without Toll without Trucks
 SR 710 North Study
 Los Angeles County, California

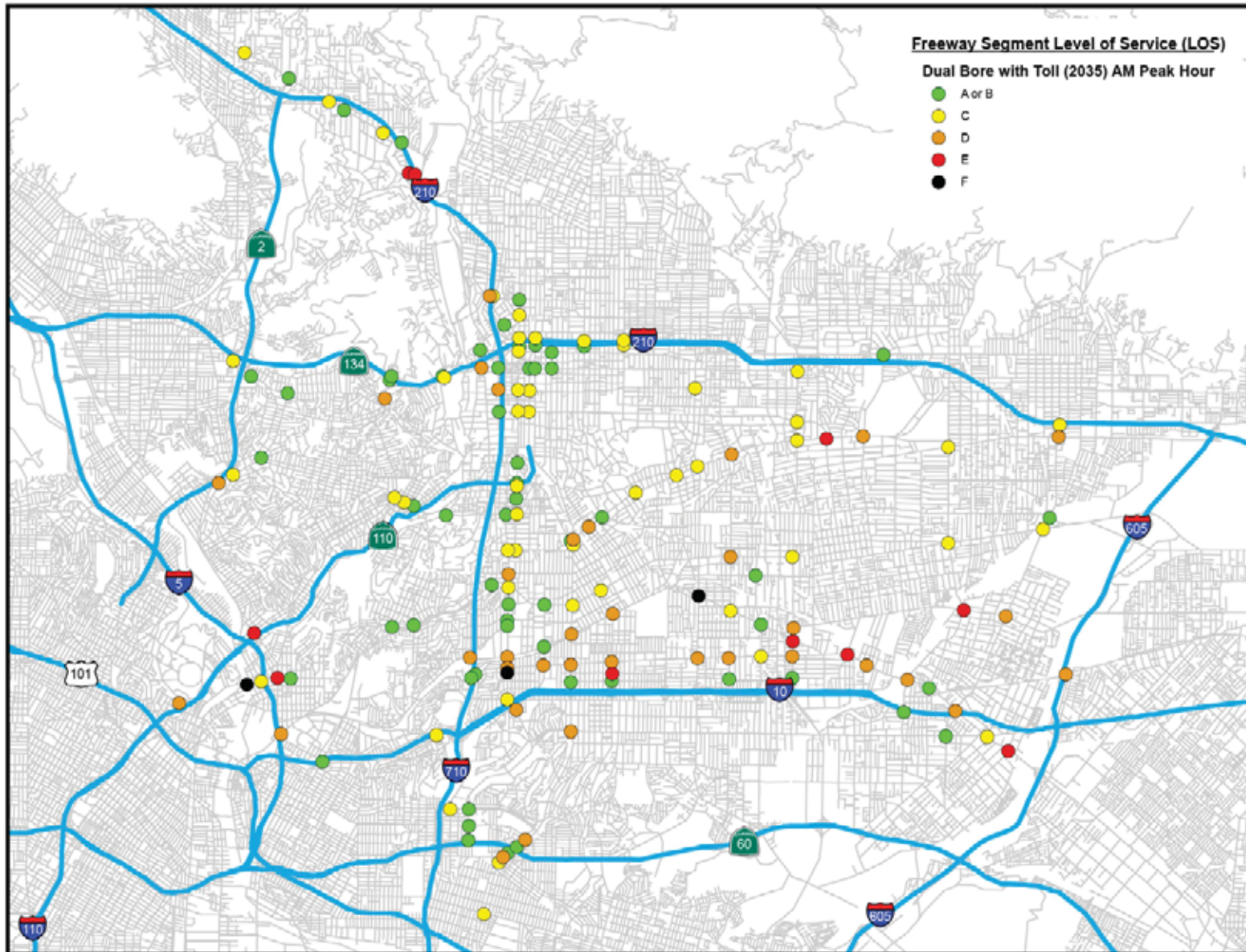


FIGURE 5-88
 Horizon Year (2035 AM) Intersection LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

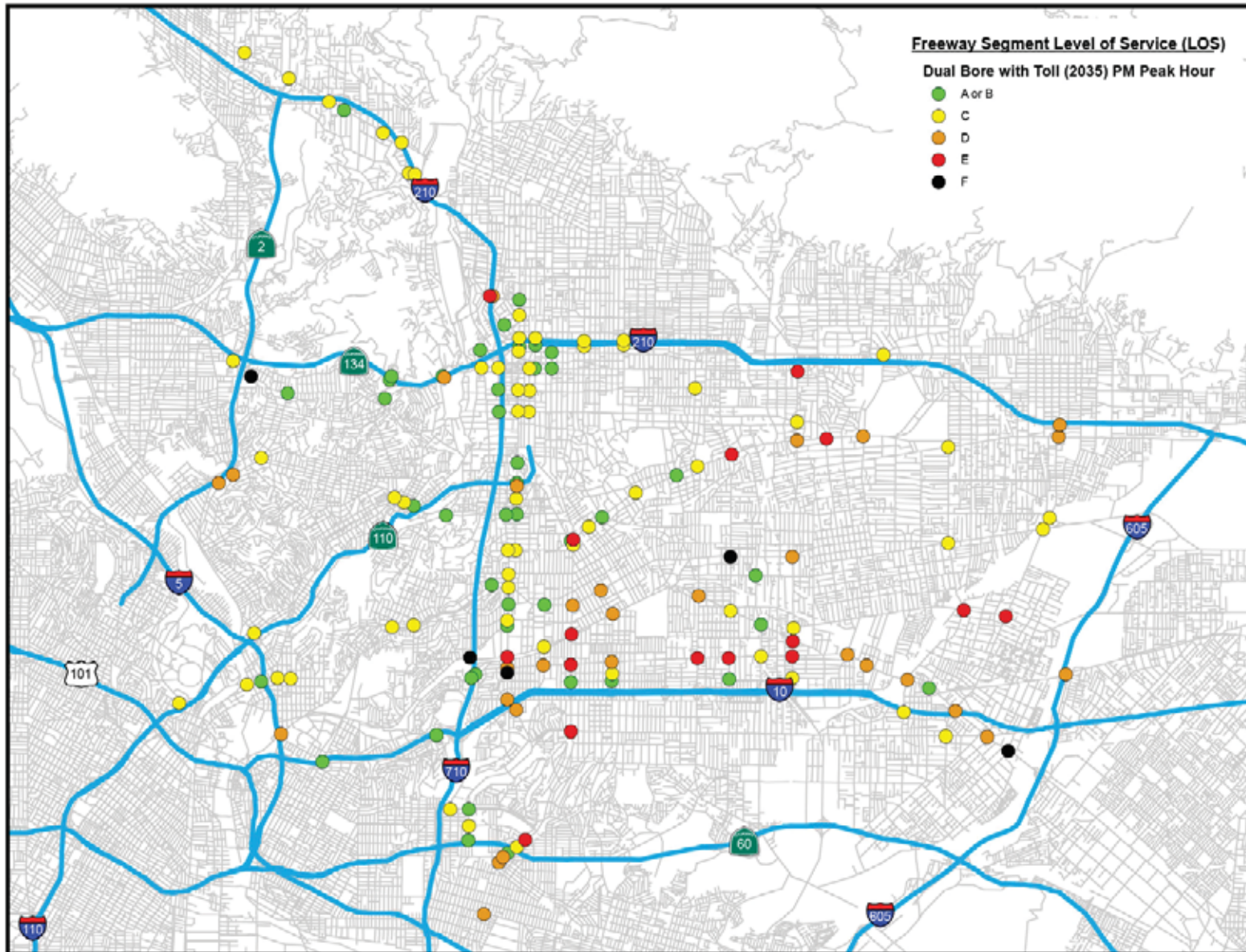


FIGURE 5-89
 Horizon Year (2035 PM) Intersection LOS -
 Dual Bore with Toll
 SR 710 North Study
 Los Angeles County, California

Other Transportation Evaluations

6.1 Parking

A parking analysis was conducted to assess the effects of both construction and operation of the TSM/TDM, BRT, LRT, and Freeway Tunnel Alternatives on parking near the physical construction for each alternative.

6.1.1 Methodology

6.1.1.1 Study Area

The study area for each alternative was defined as the area directly along and immediately adjacent to each respective alignment during construction and/or operation. The specific study area for each of the alternatives is as follows:

- TSM/TDM—The study area encompassed both intersections and roadway segments during construction and operation of the proposed improvements. The study area at intersections was identified as the maximum disturbance limit (MDL). The MDL included cross streets, but not arterials outside of the intersection crosswalks. For roadways, the study area was also within the MDL, defined in this case to include cross-street limits, and did not include locations at intersections (between crosswalks) including cross streets. The MDL for both intersections and roadways had variable lengths, depending on the improvement.
- BRT—The study area was identified as the entire length of the alignment, plus the area along immediately adjacent streets. As the BRT would be located along streets, the study area encompassed both sides of each arterial along the BRT alignment and also included streets immediately adjacent to the alignment (nearest parallel streets one block north, south, east, or west of the alignment and nearest perpendicular streets to the alignment).
- LRT—Both the construction footprint and final reconfiguration of roadways during operations (due to the placement of medians, columns, or stations) was identified as the study area. The station locations were based on the station conceptual plans dated January 24, 2014.
- Freeway Tunnel—The study area was defined to be locations directly affected during construction. As these roadways were anticipated to be restored to existing conditions once construction was completed, no additional study area sections were needed for operations.

6.1.1.2 Data Collection

Data for parking supply, occupancy, and restrictions were collected for all on-street parking within the study area of each alternative. Parking supply was defined to be the existing parking inventory (both marked parking spaces and measured gray curb) within each respective study area. Parking occupancy identified the utilization of parking supply, or the number of spaces occupied. Parking restrictions were collected to identify locations within the study area where parking was either restricted, allowed metered or unmetered, time limited, or prohibited. For parking to be provided by the project (that is, proposed LRT station parking structures), the parking demand was forecast using the year 2035 park-and-ride model projections. The parking supply at these structures was based on station conceptual plans.

6.1.1.3 Time Periods

Parking supply, occupancy, and restrictions for each of the previously defined study areas were collected during the time periods listed in Table 6-1.

TABLE 6-1
Time Periods for Data Collection per Alternative
SR 710 North Study, Los Angeles County, California

Alternative	Weekday				Weekend
	AM 7:00 AM - 9:00 AM	Midday 1:00 PM - 3:00 PM	PM 4:00 PM - 6:00 PM	Evening 7:00 PM - 9:00 PM	Midday 1:00 PM - 3:00 PM
TSM/TDM	X		X		
BRT	X		X		
LRT		X		X	X
Freeway Tunnel		X			

For each alternative, the time periods selected for analysis were based on when the parking demand was anticipated to be highest.

6.1.1.4 Off-Street Parking

There are a variety of land uses the entire length of the alternatives, including commercial, industrial, residential, recreational, and institutional. As mandated by zoning codes relative to parking requirements, these uses provide off-street parking facilities separate from on-street parking, such as private parking lots/structures. The use of such private parking facilities was not assumed for replacement of impacted on-street parking, and as such was not included in the overall parking supply for the alternatives.

6.1.1.5 Identification of Parking Losses

In conjunction with the design team, the number of parking spaces that would either be permanently lost during weekday AM and PM peak periods, permanently lost during construction, or permanently lost during all hours of the day was identified. These numbers were subtracted from the parking supply to determine the remaining spaces available during AM and PM peak periods and during all non-peak period hours.

A determination of whether the remaining parking spaces could accommodate the existing parking demand at the study locations was made by subtracting the occupancy of supply and the total parking losses from the total parking supply. Available adjacent parking supply was identified in the event the remaining spaces were not enough to accommodate the demand/occupancy.

6.1.2 TSM/TDM Alternative Parking Summary

The following sections summarize the parking conditions during both construction and operation of the TSM/TDM improvements.

6.1.2.1 Construction

Given that the TSM/TDM Alternative would involve only minor street work (such as restriping or changes to curbs), construction activities associated with this alternative would be isolated and short in duration (anticipated to be less than one week of construction at each location). As a result, there would be negligible effects on parking conditions during construction.

6.1.2.2 Operation

The operational components of the TSM/TDM Alternative would result in permanent losses to on-street parking, either limited to peak periods (anticipated to be weekday mornings between 7:00 AM and 9:00 AM and evenings between 4:00 PM and 6:00 PM) or during all hours of the day.

Table 6-2 provides a summary of the results of the parking analysis for parking supply, weekday AM and PM peak period permanent parking losses, permanent parking losses (all hours), and remaining parking spaces. The TSM/TDM Alternative would result in 26 spaces to be permanently lost during the weekday AM and PM peak periods and 220 spaces to be permanently lost during all hours of the day. Approximately 195 spaces would remain available (unoccupied) during the weekday AM and PM peak periods and 221 spaces would be available during all hours.

6.1.3 BRT Alternative Parking Summary

The following sections summarize the parking conditions during both construction and operation of the BRT Alternative.

6.1.3.1 Construction

Given that the BRT Alternative would involve only minor street work (such as restriping or construction of bus shelters), construction activities associated with this alternative would be isolated and short in duration (anticipated to be less than one week of construction at each location). As a result, there would be negligible effects on parking.

6.1.3.2 Operation

The operational components of the BRT Alternative would result in permanent losses to on-street parking, either limited to permanent weekday AM and PM peak period (7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) losses due to operation of the BRT within the existing on-street parking lane or permanent losses during all hours of the day due to placement of a station or operation of a dedicated BRT lane.

The parking analysis for the BRT Alternative was presented by station (along the roadway segments between each station) and by city. It should be noted that the overall parking totals do not change by station or by city. Tables 6-3 through 6-6 provide the results of this analysis. Tables 6-3 and 6-4 include the analysis by station. Tables 6-5 and 6-6 include the analysis by city.

As shown in Table 6-3, of the total parking supply of 2,019 spaces, approximately 1,047 spaces would be permanently lost during operation of the BRT Alternative during the weekday AM and PM peak periods and 96 spaces would be permanently lost due to placement of a bus shelter or operation of the BRT Alternative in an exclusive configuration for a total loss of 1,143 spaces.

6.1.4 LRT Alternative Parking Summary

The following sections summarize the parking conditions during both construction and operation of the LRT Alternative.

6.1.4.1 Construction

Construction activities associated with this alternative would be more substantial than the construction activities associated with the TSM/TDM and BRT alternatives. Construction of the LRT Alternative would include the construction of proposed LRT stations, parking structures, columns, and reconfiguration of roadways.

Permanent parking losses would occur throughout the duration of the LRT construction phase. In order to determine the potential effects of the alternative on parking during construction, the overall parking supply within the construction footprint was collected. The construction footprint was defined as the area of impact that is encompassed by construction of the station and corresponding station components. Permanent parking losses after construction are due to the final reconfiguration of the roadway for construction of median and columns or placement of stations.

Table 6-7 provides a summary of the total parking supply for the LRT Alternative, the permanent parking loss during construction, and the permanent parking loss remaining after construction. All parking will be restored and available for normal use after construction (with the exception of the four spaces permanently lost after construction).

TABLE 6-2
TSM/TDM Alternative Parking Space Summary (Operations)¹
SR 710 North Study, Los Angeles County, California

ID ²	Street	Limits			Parking Space Summary				
		From	To	City	Parking Supply ³	Weekday AM and PM Peak Parking Loss ⁴	Permanent Parking Loss ⁵	Remaining Parking during AM and PM Peak Periods ⁶	Remaining Parking for All Non-Peak Period Hours ⁷
Roadway Segments									
L-2A	Fremont Avenue	Huntington	Alhambra	S. Pasadena	55	0	8	47	47
L-4	Garfield Avenue	Valley	Glendon	Alhambra	26	26	0	0	26
Roadway Segment Subtotals					81	26	8	47	73
Intersections									
I-11	Fremont Avenue/ Huntington Drive		S. Pasadena		7	0	4	3	3
I-16	Garfield Avenue/ Mission Road		Alhambra		12	0	2	10	10
I-19	Mission Road/ Del Mar Avenue		San Gabriel		28	0	17	11	11
I-22	San Gabriel Boulevard/ Marshall Street		San Gabriel		21	0	1	20	20
I-24	Huntington Drive/ Oak Knoll		San Marino		24	0	11	13	13
I-25	Huntington Drive/ Sierra Madre		San Marino		66	0	29	37	37
Intersection Subtotals					158	0	64	94	94
Special Projects									
T-1	710 Connector/ Valley Boulevard/ Mission Road ⁷		Los Angeles/ Alhambra		149	0	135	14	14
T-2	SR 110 Hook Ramps/ Fair Oaks/ State Street		S. Pasadena		53	0	13	40	40
Special Projects Subtotals					202	0	148	54	54
TOTALS					441	26	220	195	221

¹ The TSM/TDM Alternative parking summary based on build-out (operations) of the project. Construction activities associated with this alternative would be isolated and short in duration and therefore would have negligible effects on parking.

² This table only lists roadway segments and intersections where parking is anticipated to be affected by the TSM/TDM Alternative. All other locations not listed are assumed to be unaffected.

³ Parking supply numbers for TSM/TDM Intersections reflect on-street parking within MDL limits (includes parking loss at cross streets, but not on arterials outside of intersection crosswalks). For roadway segments, parking supply numbers reflect total parking spaces within the defined limits and do not include parking loss at intersections (between intersection crosswalks), including cross streets.

⁴ Permanent parking loss during weekday AM and PM peak periods (estimated to be 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) due to proposed roadway and intersection TSM/TDM improvements. Parking will be available during off-peak (non-peak period) hours.

⁵ Remaining parking during AM and PM peak periods reflects the total parking supply less permanent AM and PM peak period parking loss and permanent parking loss at intersections and roadways.

⁶ Remaining parking for all non-peak period hours reflects the total parking supply less the permanent parking loss at intersections and roadway segments.

⁷ T-1 site reflects a loss of 135 existing parking spaces for the Grifols property. The project proposes to restore a total of 141 parking spaces.

TABLE 6-3
BRT Alternative Parking Displacement Summary between Stations (Operations)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Street	Stations		Supply ²	Parking Summary	
			From	To		Weekday AM and PM Peak Period Parking Loss ³	Permanent Parking Loss ⁴
Section 1 between Whittier and Pomona Stations							
1	E	Atlantic Boulevard	Whittier	Pomona	114	100	4
1	W	Atlantic Boulevard	Whittier	Pomona	88	0	0
Section 1 Subtotals					202	100	4
Section 2 between Pomona and Cesar Chavez Stations							
2	E	Atlantic Boulevard	Pomona	Cesar Chavez	28	27	0
2	W	Atlantic Boulevard	Pomona	Cesar Chavez	14	0	0
Section 2 Subtotals					42	27	0
Section 3 between Cesar Chavez and Garvey Stations							
3	E	Atlantic Boulevard	Cesar Chavez	Garvey	172	160	0
3	W	Atlantic Boulevard	Cesar Chavez	Garvey	192	192	0
Section 3 Subtotals					364	352	0
Section 4 between Garvey and Valley Stations							
4	E	Atlantic Boulevard	Garvey	Valley	59	0	27
4	W	Atlantic Boulevard	Garvey	Valley	87	81	0
Section 4 Subtotals					146	81	27
Section 5 between Valley and Main Stations							
5	E	Atlantic Boulevard	Valley	Main	12	0	12
5	W	Atlantic Boulevard	Valley	Main	13	3	0
Section 5 Subtotals					25	3	12
Section 6 between Main and Huntington/Garfield Stations							
6	E	Atlantic Boulevard	Main	Huntington/Garfield	99	0	0
6	W	Atlantic Boulevard	Main	Huntington/Garfield	142	0	0
Section 6 Subtotals					241	0	0
Section 7 between Huntington/Garfield and Marengo Stations							
7	N	Huntington Drive	Huntington/Garfield	Marengo	88	85	0
7	S	Huntington Drive	Huntington/Garfield	Marengo	89	79	10
Section 7 Subtotals					177	164	10
Section 8 between Marengo and Mission Stations							
8	E	Fair Oaks Avenue	Marengo	Mission	56	52	4
8	W	Fair Oaks Avenue	Marengo	Mission	57	49	5
Section 8 Subtotals					113	101	9
Section 9 between Mission and Glenarm Stations							
9	E	Fair Oaks Avenue	Mission	Glenarm	92	83	4
9	W	Fair Oaks Avenue	Mission	Glenarm	90	79	11
Section 9 Subtotals					182	162	15
Section 10 between Glenarm and California Stations							
10	E	Fair Oaks Avenue	Glenarm	California	31	30	0
10	W	Fair Oaks Avenue	Glenarm	California	31	0	10
Section 10 Subtotals					62	30	10

TABLE 6-3
BRT Alternative Parking Displacement Summary between Stations (Operations)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Street	Stations		Supply ²	Parking Summary		
			From	To		Weekday AM and PM Peak Period Parking Loss ³	Permanent Parking Loss ⁴	
Section 11 between California and Fair Oaks/Del Mar Stations								
11	E	Fair Oaks Avenue	California	Fair Oaks/Del Mar	37	27	0	
11	W	Fair Oaks Avenue	California	Fair Oaks/Del Mar	31	0	0	
Section 11 Subtotals					68	27	0	
Section 12 between Fair Oaks/Del Mar and Los Robles Stations								
12	N	Del Mar Boulevard	Fair Oaks/Del Mar	Los Robles	9	0	0	
12	S	Del Mar Boulevard	Fair Oaks/Del Mar	Los Robles	7	0	0	
Section 12 Subtotals					16	0	0	
Section 13 between Los Robles and Lake Stations								
13	N	Del Mar Boulevard	Los Robles	Lake	15	0	4	
13	S	Del Mar Boulevard	Los Robles	Lake	0	0	0	
Section 13 Subtotals					15	0	4	
Section 14 between Lake and Hill Stations								
14	N	Del Mar Boulevard	Lake	Hill	50	0	0	
14	S	Del Mar Boulevard	Lake	Hill	46	0	0	
Section 14 Subtotals					96	0	0	
Section 15 between Hill and Colorado/Hill Stations								
15	E	Hill Avenue	Hill	Colorado/Hill	0	0	0	
15	W	Hill Avenue	Hill	Colorado/Hill	26	0	0	
Section 15 Subtotals					26	0	0	
Section 16 between Colorado/Hill and Colorado/Lake Stations								
16	N	Colorado Boulevard	Colorado/Hill	Colorado/Lake	85	0	0	
16	S	Colorado Boulevard	Colorado/Hill	Colorado/Lake	85	0	5	
Section 16 Subtotals					170	0	5	
Section 17 between Colorado/Lake and End Line Stations								
17	E	Lake Avenue	Colorado/Lake	End Line	38	0	0	
17	W	Lake Avenue	Colorado/Lake	End Line	36	0	0	
Section 17 Subtotals					74	0	0	
TOTALS					2,019	1,047	96	

¹ BRT Alternative parking summary based on buildout (operations) of the project. Construction activities associated with this alternative would be isolated and short in duration and therefore would have negligible effects on parking.

² Parking supply numbers reflect on-street parking within the defined limits (if on-street parking is unmarked, the distance of available curb was measured).

³ Permanent parking loss during weekday AM and PM peak periods (estimated to be 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) due to operation of the BRT Alternative.

⁴ Permanent parking losses due to placement of station or operation of a dedicated BRT lane.

N – north; S – south; E – east; W – west

TABLE 6-4
BRT Alternative Adjacent Parking Supply Summary (Operations)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Street	Stations		Supply ²	Parking Summary			Adjacent Available Supply ⁶
			From	To		Total Parking Loss ³	Peak Hour Occupancy ⁴	Surplus/(Shortfall) ⁵	
Section 1 between Whittier and Pomona Stations									
1	E	Atlantic Boulevard	Whittier	Pomona	114	104	37	(27)	53
1	W	Atlantic Boulevard	Whittier	Pomona	88	0	44	44	19
Section 1 Subtotals					202	104	81	17	72
Section 2 between Pomona and Cesar Chavez Stations									
2	E	Atlantic Boulevard	Pomona	Cesar Chavez	28	27	7	(6)	12
2	W	Atlantic Boulevard	Pomona	Cesar Chavez	14	0	0	14	17
Section 2 Subtotals					42	27	7	8	29
Section 3 between Cesar Chavez and Garvey Stations									
3	E	Atlantic Boulevard	Cesar Chavez	Garvey	172	160	16	(4)	250
3	W	Atlantic Boulevard	Cesar Chavez	Garvey	192	192	46	(46)	225
Section 3 Subtotals					364	352	62	(50)	475
Section 4 between Garvey and Valley Stations									
4	E	Atlantic Boulevard	Garvey	Valley	59	27	17	15	88
4	W	Atlantic Boulevard	Garvey	Valley	87	81	25	(19)	78
Section 4 Subtotals					146	108	42	(4)	166
Section 5 between Valley and Main Stations									
5	E	Atlantic Boulevard	Valley	Main	12	12	2	(2)	20
5	W	Atlantic Boulevard	Valley	Main	13	3	9	1	13
Section 5 Subtotals					25	15	11	(1)	33
Section 6 between Main and Huntington/Garfield Stations									
6	E	Atlantic Boulevard	Main	Huntington/Garfield	99	0	20	79	65
6	W	Atlantic Boulevard	Main	Huntington/Garfield	142	0	28	114	72
Section 6 Subtotals					241	0	48	193	137
Section 7 between Huntington/Garfield and Marengo Stations									
7	N	Huntington Drive	Huntington/ Garfield	Marengo	88	85	28	(25)	200
7	S	Huntington Drive	Huntington/ Garfield	Marengo	89	89	25	(25)	204
Section 7 Subtotals					177	174	53	(50)	404
Section 8 between Marengo and Mission Stations									
8	E	Fair Oaks Avenue	Marengo	Mission	56	56	21	(21)	49
8	W	Fair Oaks Avenue	Marengo	Mission	57	54	23	(20)	46
Section 8 Subtotals					113	110	44	(41)	95
Section 9 between Mission and Glenarm Stations									
9	E	Fair Oaks Avenue	Mission	Glenarm	92	87	8	(3)	114
9	W	Fair Oaks Avenue	Mission	Glenarm	90	90	32	(32)	105
Section 9 Subtotals					182	177	40	(35)	219
Section 10 between Glenarm and California Stations									
10	E	Fair Oaks Avenue	Glenarm	California	31	30	15	(14)	38
10	W	Fair Oaks Avenue	Glenarm	California	31	10	6	15	110
Section 10 Subtotals					62	40	21	1	148

TABLE 6-4
BRT Alternative Adjacent Parking Supply Summary (Operations)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Street	Stations		Supply ²	Parking Summary			Adjacent Available Supply ⁶
			From	To		Total Parking Loss ³	Peak Hour Occupancy ⁴	Surplus/(Shortfall) ⁵	
Section 11 between California and Fair Oaks/Del Mar Stations									
11	E	Fair Oaks Avenue	California	Fair Oaks/Del Mar	37	27	13	(3)	10
11	W	Fair Oaks Avenue	California	Fair Oaks/Del Mar	31	0	17	14	8
Section 11 Subtotals					68	27	30	11	18
Section 12 between Fair Oaks/Del Mar and Los Robles Stations									
12	N	Del Mar Boulevard	Fair Oaks/Del Mar	Los Robles	9	0	4	5	10
12	S	Del Mar Boulevard	Fair Oaks/Del Mar	Los Robles	7	0	3	4	8
Section 12 Subtotals					16	0	7	9	18
Section 13 between Los Robles and Lake Stations									
13	N	Del Mar Boulevard	Los Robles	Lake	15	4	6	5	4
13	S	Del Mar Boulevard	Los Robles	Lake	0	0	0	0	0
Section 13 Subtotals					15	4	6	5	4
Section 14 between Lake and Hill Stations									
14	N	Del Mar Boulevard	Lake	Hill	50	0	20	30	26
14	S	Del Mar Boulevard	Lake	Hill	46	0	18	28	38
Section 14 Subtotals					96	0	38	58	64
Section 15 between Hill and Colorado/Hill Stations									
15	E	Hill Avenue	Hill	Colorado/Hill	0	0	0	0	16
15	W	Hill Avenue	Hill	Colorado/Hill	26	0	10	16	12
Section 15 Subtotals					26	0	10	16	28
Section 16 between Colorado/Hill and Colorado/Lake Stations									
16	N	Colorado Boulevard	Colorado/Hill	Colorado/Lake	85	0	63	22	42
16	S	Colorado Boulevard	Colorado/Hill	Colorado/Lake	85	5	70	10	24
Section 16 Subtotals					170	5	133	32	66
Section 17 between Colorado/Lake and End Line Stations									
17	E	Lake Avenue	Colorado/Lake	End Line	38	0	32	6	0
17	W	Lake Avenue	Colorado/Lake	End Line	36	0	28	8	0
Section 17 Subtotals					74	0	60	14	0
TOTALS					2,019	1,143	693	183	1,976

¹ BRT Alternative parking summary based on buildout (operations) of the project. Construction activities associated with this alternative would be isolated and short in duration and therefore would have negligible effects on parking.

² Parking supply numbers reflect on-street parking within the defined limits (if on-street parking is unmarked, the distance of available curb was measured).

³ Total parking loss reflects the sum of Permanent Parking Loss and Weekday AM and PM Peak Period Parking Loss shown in Table 6-3.

⁴ Occupancy defined as the number of spaces occupied. Peak Hour Occupancy counts represent the highest of the AM and PM peak hour data collection periods (reflect number of spaces occupied of the total supply).

⁵ Surplus/(Shortfall) represents the total parking supply - occupancy of supply - total parking losses.

⁶ Available Adjacent Parking Supply based on subtracting the number of occupied adjacent spaces from the total supply of adjacent spaces. Adjacent street parking was defined to be the nearest parallel streets (one block north, south, east or west of the alignment) and the nearest perpendicular streets to the alignment.

TABLE 6-5
BRT Alternative Parking Displacement Summary by City (Operations)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Street	Street Limits		Supply ²	Parking Summary	
			From	To		Weekday AM and PM Peak Period Parking Loss ³	Permanent Parking Loss ⁴
East Los Angeles							
1	E	Atlantic Boulevard	Whittier Boulevard	SR 60 Freeway	132	118	0
1	W	Atlantic Boulevard	Whittier Boulevard	SR 60 Freeway	88	0	4
City of East Los Angeles Subtotals					220	118	4
Monterey Park							
2	E	Atlantic Boulevard	SR 60 Freeway	Hellman Avenue	209	194	0
2	W	Atlantic Boulevard	SR 60 Freeway	Hellman Avenue	241	223	23
City of Monterey Park Subtotals					450	417	23
Alhambra							
3	E	Atlantic Boulevard	Hellman Avenue	Garfield Avenue	100	0	16
3	W	Atlantic Boulevard	Hellman Avenue	Garfield Avenue	142	28	0
City of Alhambra Subtotals					242	28	16
South Pasadena							
4	E/N	Atlantic Boulevard/ Huntington/ Fair Oaks	Garfield Avenue	Columbia Street	279	200	15
4	W/S	Atlantic Boulevard/ Huntington/ Fair Oaks	Garfield Avenue	Columbia Street	251	194	12
City of South Pasadena Subtotals					530	394	27
Pasadena							
5	E	Fair Oaks Avenue	Columbia Street	Del Mar Boulevard	291	72	6
5	W	Fair Oaks Avenue	Columbia Street	Del Mar Boulevard	286	18	20
City of Pasadena Subtotals					577	90	26
TOTALS					2,019	1,047	96

¹ BRT Alternative parking summary based on buildout (operations) of the project. Construction activities associated with this alternative would be isolated and short in duration and therefore would have negligible effects on parking.

² Parking supply numbers reflect on-street parking within the defined limits (if on-street parking is unmarked, the distance of available curb was measured).

³ Permanent parking loss during weekday AM and PM peak periods (estimated to be 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM) due to operation of the BRT Alternative.

⁴ Permanent parking loss due to placement of station or operation of a dedicated BRT lane.

TABLE 6-6
BRT Alternative Adjacent Parking Supply Summary by City (Operations)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Main	Street Limits		Supply ²	Parking Summary			Adjacent Available Supply ⁶
			From	To		Total Parking Loss ³	Peak Hour Occupancy ⁴	Surplus/(Shortfall) ⁵	
East Los Angeles									
1	E	Atlantic Boulevard	Whittier Boulevard	SR 60 Freeway	132	120	55	(43)	53
1	W	Atlantic Boulevard	Whittier Boulevard	SR 60 Freeway	88	2	44	42	19
City of East Los Angeles Subtotals					220	122	99	(1)	72
Monterey Park									
2	E	Atlantic Boulevard	SR 60 Freeway	Hellman Avenue	209	185	33	(9)	317
2	W	Atlantic Boulevard	SR 60 Freeway	Hellman Avenue	241	223	60	(42)	295
City of Monterey Park Subtotals					450	408	93	(51)	612
Alhambra									
3	E	Atlantic Boulevard	Hellman Avenue	Garfield Boulevard	100	35	32	33	118
3	W	Atlantic Boulevard	Hellman Avenue	Garfield Boulevard	142	88	48	6	110
City of Alhambra Subtotals					242	123	80	39	228
South Pasadena									
4	E/N	Atlantic Boulevard/ Huntington/Fair Oaks	Garfield Boulevard	Columbia Street	279	177	50	52	320
4	W/S	Atlantic Boulevard/ Huntington/Fair Oaks	Garfield Boulevard	Columbia Street	251	179	70	2	281
City of South Pasadena Subtotals					530	356	120	54	601
Pasadena									
5	E	Fair Oaks Avenue	Columbia Street	Del Mar Boulevard	291	85	150	56	213
5	W	Fair Oaks Avenue	Columbia Street	Del Mar Boulevard	286	49	151	86	250
City of Pasadena Subtotals					577	134	301	142	463
TOTALS					2,019	1,143	693	183	1,976

¹ BRT Alternative parking summary based on buildout (operations) of the project. Construction activities associated with this alternative would be isolated and short in duration and therefore would have negligible effects on parking.

² Parking supply numbers reflect on-street parking within the defined limits (if on-street parking is unmarked, the distance of available curb was measured).

³ Total parking loss reflects the sum of Permanent Parking Loss and Weekday AM and PM Peak Period Parking Loss shown in Table 6-3.

⁴ Occupancy defined as the number of spaces occupied. Peak Hour Occupancy counts represent the highest of the AM and PM peak hour data collection periods (reflect number of spaces occupied of the total supply).

⁵ Surplus/(Shortfall) represents the total parking supply - occupancy of supply - total parking losses.

⁶ Available Adjacent Parking Supply is based on subtracting the number of occupied adjacent spaces from the total supply of adjacent spaces.

TABLE 6-7
LRT Alternative Parking Demand vs. Parking Supply at Proposed Stations (Operations)¹
SR 710 North Study, Los Angeles County, California

		Parking Summary		
No.	Station	Estimated LRT Parking Demand ²	Proposed Parking Supply ³	Surplus/(Shortfall)
1	Civic Center	-	-	-
2	Floral	370	415	45
3	Cal State LA	-	-	-
4	Alhambra	341	382	41
5	Huntington	355	397	42
6	South Pasadena	268	338	70
7	Fillmore	-	-	-
TOTALS		1,334	1,532	240

		Limits ⁴		Parking Summary			
Segment	Side	Street	From	To	Supply ⁵	Permanent Parking Loss During Construction ⁶	Permanent Parking Loss During Construction ⁷
Mednik Segment							
1	E	Mednik Avenue	Third Street	Floral Drive	48	48	0
1	W	Mednik Avenue	Third Street	Floral Drive	80	80	0
Mednik Segment Subtotals					128	128	0
Floral Segment							
2	N	Floral Drive	Mednik Avenue	Dangler Avenue	6	6	0
2	S	Floral Drive	Mednik Avenue	Dangler Avenue	20	20	0
Floral Segment Subtotals					26	26	0
Cal State LA Segment							
3	E	Circle Drive	Campus Road	Cal State LA Station	0	0	0
3	W	Circle Drive	Campus Road	Cal State LA Station	0	0	0
Cal State LA Segment Subtotals					0	0	0
Alhambra Segment							
4	E	Fremont Avenue	Concord Avenue	Orange Avenue	0	0	0
4	W	Fremont Avenue	Concord Avenue	Orange Avenue	0	0	0
Alhambra Segment Subtotals					0	0	0
Huntington Segment							
5	E/N	Fair Oaks Avenue/ Huntington Drive	Huntington Drive	Laurel Street	14	14	0
5	W/S	Fair Oaks Avenue/ Huntington Drive	Huntington Drive	Laurel Street	20	16	4
Huntington Segment Subtotals					34	30	4

TABLE 6-7
LRT Alternative Parking Demand vs. Parking Supply at Proposed Stations (Operations)¹
SR 710 North Study, Los Angeles County, California

South Pasadena Segment							
6	E	Fair Oaks Avenue	Hope Street	El Centro Street	16	16	0
6	W	Fair Oaks Avenue	Hope Street	El Centro Street	14	14	0
South Pasadena Segment Subtotals					30	30	0
Fillmore Segment							
7	E	Raymond Avenue	Fillmore Street	Pico Street	14	14	0
7	W	Raymond Avenue	Fillmore Street	Pico Street	12	12	0
Fillmore Segment Subtotals					26	26	0

¹ Construction of the proposed LRT parking structures would not result in loss of any existing parking spaces. No parking structures will be provided at the Civic Center, Cal State LA, and Fillmore LRT Stations.

² Parking demand based on 2035 park-and-ride model output and applying an average vehicle occupancy of 1.12.

³ Parking supply based on January 24, 2014, station conceptual site plans.

⁴ Limits are defined as the area of impact: area encompassed by construction of the station and corresponding station components. Streets identified to be closest boundaries of the area of impact.

⁵ Parking supply numbers reflect on-street parking within the defined limits (of on-street parking is unmarked, the distance of available curb was measured).

⁶ Permanent parking loss due to construction of proposed LRT stations. Parking affected by construction assumed to be restored after completion of project.

⁷ Permanent parking loss due to final reconfiguration of roadway for construction of median and columns or placement of station.

6.1.4.2 Operation

Table 6-7 also includes a summary of the parking supply and demand at the proposed LRT parking stations (Floral, Alhambra, Huntington, and South Pasadena Stations) at which off-street parking will be provided during operations. Parking demand at the stations was based on year 2035 park-and-ride model projections. Parking supply was based on the station conceptual plans dated January 24, 2014. Existing on-street parking was not anticipated to be affected by construction of the proposed LRT stations. Activities during operation of the LRT (buildout) would have negligible effects on parking conditions (a total of four spaces lost). Parking to be provided at the proposed LRT parking structures would exceed the projected demand, as shown in Table 6-7.

6.1.5 Freeway Tunnel Alternative Parking Summary

The following sections summarize the parking conditions during both construction and operation of the Freeway Tunnel Alternative.

6.1.5.1 Construction

Construction activities associated with this alternative would be more substantial than the construction activities associated with the TSM/TDM and BRT alternatives. Construction of the Freeway Tunnel Alternative would include construction and closure of bridge sections with on-street parking.

Permanent parking losses would occur throughout the duration of the Freeway Tunnel Alternative construction phase. Construction of this alternative would only affect on-street parking on the Green Street Bridge section. In order to determine the potential effects of the alternative on parking during construction, data for the overall parking supply on the Green Street Bridge and adjacent bridges (Union Street and Colorado Boulevard) were collected.

Table 6-8 provides a summary of the total parking supply, the permanent parking loss during construction, and the permanent parking loss remaining after construction. All parking will be restored and available for normal use. Table 6-9 provides a summary of the parking surplus or shortfall by subtracting the occupancy of supply and the total parking losses from the total parking supply.

6.1.5.2 Operation

Activities during operation of the Freeway Tunnel Alternative (buildout) would have negligible effects on parking conditions (no permanent parking loss after construction).

TABLE 6-8
Freeway Tunnel Alternative Parking Loss Summary (Construction)¹
SR 710 North Study, Los Angeles County, California

Bridge	Side	Street	Limits		Supply ²	Parking Summary		
			From	To		Permanent Parking Losses During Construction ³	Permanent Parking Losses After Construction ⁴	
Union Street Bridge								
1	N	Union Street	St. John Avenue	Pasadena Avenue	20	0	0	
1	S	Union Street	St. John Avenue	Pasadena Avenue	0	0	0	
Union Street Bridge Subtotals					20	0	0	
Colorado Boulevard Bridge								
2	N	Colorado Boulevard	St. John Avenue	Pasadena Avenue	14	0	0	
2	S	Colorado Boulevard	St. John Avenue	Pasadena Avenue	16	0	0	
Colorado Boulevard Bridge Subtotals					30	0	0	
Green Street Bridge								
3	N	Green Street	St. John Avenue	Pasadena Avenue	17	17	0	
3	S	Green Street	St. John Avenue	Pasadena Avenue	0	0	0	
Green Street Bridge Subtotals					17	17	0	
TOTALS					67	17	0	

¹ Freeway Tunnel Alternative parking summary based on construction of the project. Activities during operation of the Freeway Tunnel Alternative would have negligible effects on parking.

² Parking supply numbers for Freeway Tunnel Alternative reflect on-street parking numbers on each affected bridge.

³ Permanent parking losses during construction of on each bridge section. Parking losses during construction are assumed to be restored after completion of the project.

⁴ Permanent parking loss remaining after construction of the Freeway Tunnel Alternative.

6.2 Cost-Benefit Analysis

A formal cost-benefit analysis will be documented in a separate report. The cost-benefit analysis includes an assessment of each alternative. The costs elements include capital expenditures, operational costs, and residual value. The benefits elements include time savings, vehicle-operating costs, accident savings, and emissions. All of the benefits elements were determined using inputs from the products of the forecasting analysis described in Sections 2 to 4.

TABLE 6-9
Tunnel Alternative Adjacent Parking Summary (Construction)¹
SR 710 North Study, Los Angeles County, California

Section	Side	Street	Limits		Supply ²	Parking Summary			Adjacent Available Supply ⁶
			From	To		Total Parking Loss ³	Peak Hour Occupancy ⁴	Surplus/(Shortfall) ⁵	
Union Street									
1	N	Union Street	St. John Avenue	Pasadena Avenue	20	0	7	13	19
1	S	Union Street	St. John Avenue	Pasadena Avenue	0	0	0	0	0
Union Street Subtotals					20	0	7	13	19
Colorado Boulevard									
2	N	Colorado Boulevard	St. John Avenue	Pasadena Avenue	14	0	10	4	39
2	S	Colorado Boulevard	St. John Avenue	Pasadena Avenue	16	0	16	0	0
Colorado Boulevard Subtotals					30	0	26	4	39
Green Street									
3	N	Green Street	St. John Avenue	Pasadena Avenue	17	17	1	(1)	14
3	S	Green Street	St. John Avenue	Pasadena Avenue	0	0	0	0	6
Green Street Subtotals					17	17	1	(1)	20
TOTALS					67	17	34	16	78

¹ Freeway Tunnel Alternative parking summary based on construction of the project. Activities during operation of the Freeway Tunnel Alternative would have negligible effects on parking.

² Parking supply numbers for Freeway Tunnel Alternative reflect on-street parking numbers on each affected bridge.

³ Total parking loss reflects the sum of Permanent Parking Loss during and after Construction shown in Table 8.

⁴ Peak Hour Occupancy counts represent the highest of the AM and PM peak hour data collection periods (reflect number of spaces occupied of the total supply).

⁵ Surplus/(Shortfall) represents the total parking supply - occupancy of supply - total losses

⁶ Available Adjacent Parking Supply based on subtracting the number of occupied adjacent spaces from the total supply of adjacent spaces. Adjacent street parking was defined to be the nearest parallel streets (one block north, south, east or west of the alignment) and the nearest perpendicular streets to the alignment. As construction would not occur on all three bridges simultaneously, the adjacent available supply also reflects the parking that will become available as the nearest bridge opens.

6.3 Bike/Pedestrian (Active Transportation)

6.3.1 Overview of Effects

While the SR 710 alternatives focus on highway and transit improvements, they will have direct and indirect effects on active transportation users, including bicyclists and pedestrians. The identified effects, by alternative, are described below.

6.3.1.1 TSM/TDM Alternative

- On the arterials and intersections, the TSM/TDM improvements will accommodate pedestrians and comply with Americans with Disabilities Act (ADA) requirements. Class III bikeways will be accommodated, but Class I and Class II will not, due to limited lane widths.
- On St. John Avenue from California Boulevard to Del Mar Boulevard, the proposed improvements are within Caltrans excess ROW (freeway mainline only) and provide for pedestrian access.
- At the Valley Boulevard connector road and T-2 hook ramps, the proposed improvements within Caltrans ROW (freeway mainline and off-ramps) will not provide pedestrian or bikeway access beyond what is currently allowed for emergency access in the Caltrans *Highway Design Manual* (Caltrans, 2012) and *Standard Plans* (Caltrans, 2010).

6.3.1.2 BRT Alternative

- Bicyclists are allowed to ride in the proposed peak-period bus lanes at all times. Proper signage will be provided and read “Bike Ok” similar to the signage along Wilshire Boulevard. During the AM and PM peak periods, bicycles will share the bus lane with buses, and right-turning vehicles near intersections or at driveways. Outside of peak hours, bicyclists may need to share the outside general traffic lane with other vehicular traffic. Limited conflict areas between buses and bicycles will occur at bus stop locations, where bus drivers will need to be alert for presence of bike traffic.
- ADA-compliant curb ramps and sidewalks will be provided where street modifications are proposed. ADA-compliant tree grates at tree wells will be provided.
- Bike racks and/or lockers can be provided at proposed BRT stations if desired by the local community.
- The BRT Alternative improves connectivity to Metro Gold Line and many other points of interest along the proposed corridor for pedestrians and bicyclists.
- In areas with proposed bus lanes, the BRT Alternative reduces the width of sidewalks to a minimum of 8 feet at bus stops, and a minimum of 6 feet elsewhere.
- Bus lanes proposed on Atlantic Boulevard, Huntington Drive, and Fair Oaks Avenue will increase the length of the pedestrian crosswalk at many locations.

6.3.1.3 LRT Alternative

- Mednik Avenue will be restriped between First Street and Floral Drive to provide a new Class II bicycle lane.
- The SR 710 northbound off-ramp will be realigned to be adjacent to the southbound on-ramp, reducing the two existing intersections to one. The single intersection will be somewhat more complex for bicycles and pedestrians.
- New ADA-compliant sidewalks will be provided on the north and south sides of Valley Boulevard between the existing SR 710 northbound off-ramp (to be removed) and the southbound on-ramp. There is currently no sidewalk on the north side, and a non-ADA-compliant sidewalk on the south side.
- A pedestrian plaza will be constructed between the proposed underground Fillmore Station and the existing at-grade Fillmore Station.
- A new sidewalk will be provided on Circle Drive, connecting the Cal State LA Station to the existing El Monte Busway/Metroink Station.

6.3.1.4 Freeway Tunnel Alternative

- The St. John Avenue extension requires a realignment of St. John Avenue and widening of the street at Del Mar Boulevard. This concept results in a slightly wider pedestrian crossing on the north side of Del Mar Boulevard, adds a pedestrian crossing on the south side of Del Mar Boulevard, and adds a new sidewalk on the west side of the St. John Avenue extension from Del Mar Boulevard to California Boulevard. The existing bike path along St. John Avenue may be extended from Del Mar Boulevard to California Boulevard.
- The existing sidewalk on the west side of Pasadena Avenue between Green Street and Colorado Boulevard will be moved farther west to accommodate a new lane from the northbound Pasadena Avenue off-ramp. The existing crosswalk along the north and south sides of Green Street and across Pasadena Avenue will be lengthened as a result.
- For the dual-bore variation only, the existing crosswalk on the north and south sides of Green Street at St. John Avenue will be lengthened to accommodate a southbound SR 710 on-ramp from St. John Avenue.
- For the dual-bore variation only, the existing crosswalk on the south side of Colorado Boulevard at St. John Avenue will be lengthened to accommodate a new lane.
- New sidewalk is proposed on westbound Valley Boulevard between the SR 710 northbound off-ramp and the SR 710 southbound on-ramp at Valley Boulevard.

6.3.2 Quantitative Analysis

Pedestrian and bicycle counts were collected in the field on weekdays from March through July 2013. Observations were made at the same time as the vehicular turning movement counts, during both the AM and PM peak periods (3 hours each). The counts included all 156 intersections, and data were reported separately for pedestrians and bicycles. Data were tabulated per intersection. For pedestrians, each leg (crosswalk) was counted. For bicycles, the count included bicycles using the crosswalk or travelling perpendicular to the leg in the travel lanes or in a bike lane.

There was an average of approximately 45 pedestrians per hour in the AM peak, and 56 pedestrians per hour in the PM peak. The highest-volume pedestrian intersections, listed on Table 6-10, were at the Daly Street/Broadway intersection in Los Angeles (374 pedestrians per hour), Los Robles Avenue/Colorado Boulevard in Pasadena (338 pedestrians per hour), and Atlantic Boulevard/Whittier Boulevard in East Los Angeles (330 pedestrians per hour).

The potential for the effects on pedestrians was evaluated by considering the traffic operations analysis at the intersections (described in Section 5.4.2), and comparing those intersections with increases in delay to the pedestrian volumes. Intersections with the highest increases in delay with the build alternatives and the highest pedestrian volumes were identified. The 10 intersections with the highest combinations of delay increases and pedestrian volumes are listed in Tables 6-11 to 6-19.

TABLE 6-10
Intersections with Highest Pedestrian Volumes
SR 710 North Study, Los Angeles County, California

Intersection	Jurisdiction	Pedestrians per Hour
Daly Street / Broadway	Los Angeles	374
Los Robles Avenue / Colorado Boulevard	Pasadena	338
Atlantic Boulevard / Whittier Boulevard	East Los Angeles	330
Figueroa Street / Avenue 26	Los Angeles	253
Griffin Avenue / Broadway	Los Angeles	247
Marengo Avenue / Colorado Boulevard	Pasadena	225
Marengo Street / Maple Street (I-210 WB ramps)	Pasadena	213
Del Mar Avenue / Valley Boulevard	San Gabriel	180
Atlantic Boulevard / Cesar Chavez Avenue	Monterey Park	177
Rosemead Boulevard / Mission Drive	Rosemead	168

TABLE 6-11
2035 TSM/TDM Intersections with Potential Effects on Pedestrians
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	41
2	Del Mar Avenue / Valley Boulevard	San Gabriel	180	11
3	Griffin Avenue / Broadway	Los Angeles	247	3
4	Garfield Avenue / Main Street	Alhambra	160	4
5	Atlantic Boulevard / Main Street	Alhambra	101	11
6	Fair Oaks Avenue / Monterey Road	South Pasadena	70	24
7	Rosemead Boulevard / Valley Boulevard	Rosemead	107	8
8	Avenue 20 / Broadway	Los Angeles	135	4
9	Durfee Avenue / Valley Boulevard	El Monte	91	8
10	Huntington Drive / Monterey Road	Los Angeles	57	43

¹Seconds per vehicle

TABLE 6-12
2035 BRT Intersections with Potential Effects on Pedestrians
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	42
2	Del Mar Avenue / Valley Boulevard	San Gabriel	180	9
3	Griffin Avenue / Broadway	Los Angeles	247	3
4	Garfield Avenue / Main Street	Alhambra	160	4
5	Durfee Avenue / Valley Boulevard	El Monte	91	12
6	Fair Oaks Avenue / Monterey Road	South Pasadena	70	22
7	Avenue 20 / Broadway	Los Angeles	135	3
8	Fair Oaks Avenue / California Boulevard	Pasadena	100	7
9	Huntington Drive / Monterey Road	Los Angeles	57	42
10	Atlantic Boulevard / Main Street	Alhambra	101	5

¹Seconds per vehicle

TABLE 6-13
2035 LRT Intersections with Potential Effects on Pedestrians
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	44
2	Atlantic Boulevard / Valley Boulevard	Alhambra	136	28
3	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	146	20
4	Del Mar Avenue / Valley Boulevard	San Gabriel	180	7
5	Figueroa Street / Avenue 26	Los Angeles	253	5
6	Griffin Avenue / Broadway	Los Angeles	247	4
7	Durfee Avenue / Valley Boulevard	El Monte	91	15
8	Fair Oaks Avenue / Monterey Road	South Pasadena	70	21
9	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	112	5
10	Avenue 20 / Broadway	Los Angeles	135	4

¹Seconds per vehicle

TABLE 6-14
2035 Single-Bore (Toll) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Pedestrians
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	37
2	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	154	9
3	Griffin Avenue / Broadway	Los Angeles	247	5
4	Avenue 20 / Broadway	Los Angeles	135	4
5	Rosemead Boulevard / Valley Boulevard	Rosemead	107	6
6	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	112	4
7	Durfee Avenue / Valley Boulevard	El Monte	91	9
8	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	330	2
9	Fair Oaks Avenue / Monterey Road	South Pasadena	70	12
10	Lake Avenue / Corson Street (I-210 EB Off-Ramp)	Pasadena	113	3

¹Seconds per vehicle

TABLE 6-15

2035 Single-Bore (Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Pedestrians*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	36
2	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	154	7
3	Griffin Avenue / Broadway	Los Angeles	247	3
4	Marengo Street / Maple Street (I-210 WB Ramps)	Pasadena	213	3
5	Avenue 20 / Broadway	Los Angeles	135	4
6	Durfee Avenue / Valley Boulevard	El Monte	91	9
7	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	112	3
8	Del Mar Avenue / Valley Boulevard	San Gabriel	180	2
9	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	57	24
10	Fair Oaks Avenue / Monterey Road	South Pasadena	70	7

¹Seconds per vehicle

TABLE 6-16

2035 Single-Bore (Toll and Express Bus) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Pedestrians*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	37
2	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	154	8
3	Griffin Avenue / Broadway	Los Angeles	247	4
4	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	330	3
5	Durfee Avenue / Valley Boulevard	El Monte	91	13
6	Avenue 20 / Broadway	Los Angeles	135	5
7	Marengo Street / Maple Street (I-210 WB Ramps)	Pasadena	213	2
8	Del Mar Avenue / Valley Boulevard	San Gabriel	180	2
9	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	146	3
10	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	112	3

¹Seconds per vehicle

TABLE 6-17

2035 Dual-Bore (No Toll) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Pedestrians
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	31
2	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	146	15
3	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	330	5
4	Figueroa Street / Avenue 26	Los Angeles	253	5
5	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	154	9
6	Griffin Avenue / Broadway	Los Angeles	247	4
7	Del Mar Avenue / Valley Boulevard	San Gabriel	180	4
8	Atlantic Boulevard / Cesar Chavez Avenue	Monterey Park	177	3
9	Durfee Avenue / Valley Boulevard	El Monte	91	11
10	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	57	26

¹Seconds per vehicle

TABLE 6-18

2035 Dual-Bore (No Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Pedestrians
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	30
2	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	146	15
3	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	330	4
4	Griffin Avenue / Broadway	Los Angeles	247	5
5	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	154	8
6	Del Mar Avenue / Valley Boulevard	San Gabriel	180	3
7	Durfee Avenue / Valley Boulevard	El Monte	91	13
8	Avenue 20 / Broadway	Los Angeles	135	3
9	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	57	28
10	Lake Avenue / Corson Street (I-210 EB Off-Ramp)	Pasadena	113	3

¹Seconds per vehicle

TABLE 6-19

2035 Dual-Bore (Toll) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Pedestrians*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Pedestrians per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	168	31
2	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	146	15
3	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	330	5
4	Figueroa Street / Avenue 26	Los Angeles	253	5
5	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	154	9
6	Del Mar Avenue / Valley Boulevard	San Gabriel	180	4
7	Griffin Avenue / Broadway	Los Angeles	247	4
8	Atlantic Boulevard / Cesar Chavez Avenue	Monterey Park	177	3
9	Durfee Avenue / Valley Boulevard	El Monte	91	11
10	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	57	28

¹ Seconds per vehicle

There was an average of approximately 9 bicycles per hour in the AM peak, and 13 bicycles per hour in the PM peak. The highest volume bicycle intersections, listed in Table 6-20, were at Atlantic Boulevard/Pomona Boulevard in Los Angeles (40 bicycles per hour), Baldwin Avenue/Valley Boulevard intersection in El Monte (39 bicycles per hour), and Fair Oaks Avenue/Orange Grove Boulevard in Pasadena (also 39 bicycles per hour).

The potential for effects on bicyclists was evaluated by considering the traffic operations analysis at the intersections described in Section 5.4.2, and comparing those intersections with increases in delay to the bicycle volumes. Intersections with the highest increases in delay with the build alternatives and the highest bicycle volumes were identified. The 10 intersections with the highest combinations of delay increases and bicycle volumes are listed in Tables 6-21 to 6-29.

TABLE 6-20

Intersections with Highest Bicycle Volumes*SR 710 North Study, Los Angeles County, California*

Intersection	Jurisdiction	Bicyclists per Hour
Atlantic Boulevard / Pomona Boulevard	East Los Angeles	40
Baldwin Avenue / Valley Boulevard	El Monte	39
Fair Oaks Avenue / Orange Grove Boulevard	Pasadena	39
Marengo Street / Maple Street (I-210 WB ramps)	Pasadena	34
Marengo Avenue / Colorado Boulevard	Pasadena	33
Los Robles Avenue / Colorado Boulevard	Pasadena	31
San Marino Avenue / Huntington Drive	San Marino	30
Temple City Boulevard / Valley Boulevard	Rosemead	29
Walnut Grove Avenue / Valley Boulevard	Rosemead	29
Rosemead Boulevard / Las Tunas Drive	Temple City	29

TABLE 6-21
2035 TSM/TDM Intersections with Potential Effects on Bicyclists
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	41
2	Fremont Avenue / Mission Road	Alhambra	23	71
3	Del Mar Avenue / Valley Boulevard	San Gabriel	12	11
4	Durfee Avenue / Valley Boulevard	El Monte	9	8
5	Rosemead Boulevard / Valley Boulevard	Rosemead	7	8
6	Walnut Grove Avenue / Valley Boulevard	Rosemead	11	3
7	Baldwin Avenue / Valley Boulevard	El Monte	25	2
8	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	18	24
9	Eagle Rock Boulevard / Verdugo Road/ Avenue 40	Los Angeles	25	12
10	Eagle Rock Boulevard / York Boulevard	Los Angeles	8	5

¹Seconds per vehicle

TABLE 6-22
2035 BRT Intersections with Potential Effects on Bicyclists
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	42
2	Fremont Avenue / Mission Road	Alhambra	23	71
3	Durfee Avenue / Valley Boulevard	El Monte	12	12
4	Del Mar Avenue / Valley Boulevard	San Gabriel	9	9
5	Walnut Grove Avenue / Valley Boulevard	Rosemead	25	3
6	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	11	26
7	Rosemead Boulevard / Valley Boulevard	Rosemead	18	2
8	Baldwin Avenue / Valley Boulevard	El Monte	11	1
9	Eagle Rock Boulevard / York Boulevard	Los Angeles	8	5
10	Avenue 20 / Broadway	Los Angeles	7	3

¹Seconds per vehicle

TABLE 6-23
2035 LRT Intersections with Potential Effects on Bicyclists
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	44
2	Durfee Avenue / Valley Boulevard	El Monte	11	15
3	Fremont Avenue / Mission Road	Alhambra	13	26
4	Walnut Grove Avenue / Valley Boulevard	Rosemead	23	7
5	Del Mar Avenue / Valley Boulevard	San Gabriel	11	7
6	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	12	5
7	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	25	26
8	Rosemead Boulevard / Valley Boulevard	Rosemead	11	3
9	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	22	20
10	Baldwin Avenue / Valley Boulevard	El Monte	18	2

¹Seconds per vehicle

TABLE 6-24
2035 Single-Bore (Toll) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Bicyclists
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	37
2	Durfee Avenue / Valley Boulevard	El Monte	14	9
3	Walnut Grove Avenue / Valley Boulevard	Rosemead	12	4
4	Rosemead Boulevard / Valley Boulevard	Rosemead	18	6
5	Fair Oaks Avenue / Walnut Street	Pasadena	25	12
6	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	22	4
7	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	25	27
8	Fremont Avenue / Mission Road	Alhambra	16	3
9	Avenue 20 / Broadway	Los Angeles	11	4
10	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	12	9

¹Seconds per vehicle

TABLE 6-25

2035 Single-Bore (Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Bicyclists*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	36
2	Durfee Avenue / Valley Boulevard	El Monte	14	9
3	Walnut Grove Avenue / Valley Boulevard	Rosemead	12	4
4	Marengo Street / Maple Street (I-210 WB Ramps)	Pasadena	34	3
5	Fair Oaks Avenue / Walnut Street	Pasadena	18	12
6	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	25	3
7	Fremont Avenue / Mission Road	Alhambra	22	3
8	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	23	24
9	Avenue 20 / Broadway	Los Angeles	13	4
10	Eagle Rock Boulevard / Verdugo Road/Avenue 40	Los Angeles	11	5

¹Seconds per vehicle

TABLE 6-26

2035 Single-Bore (Toll and Express Bus) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Bicyclists*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	37
2	Durfee Avenue / Valley Boulevard	El Monte	14	13
3	Fair Oaks Avenue / Walnut Street	Pasadena	12	12
4	Walnut Grove Avenue / Valley Boulevard	Rosemead	16	4
5	Marengo Street / Maple Street (I-210 WB Ramps)	Pasadena	25	2
6	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	18	25
7	Lake Avenue / Maple Street (I-210 WB On-Ramp)	Pasadena	34	3
8	Fair Oaks Avenue / Orange Grove Boulevard	Pasadena	23	2
9	Avenue 20 / Broadway	Los Angeles	13	5
10	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	22	8

¹Seconds per vehicle

TABLE 6-27

2035 Dual-Bore (No Toll) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Bicyclists*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	31
2	Durfee Avenue / Valley Boulevard	El Monte	13	11
3	Fair Oaks Avenue / Walnut Street	Pasadena	16	12
4	Del Mar Avenue / Valley Boulevard	San Gabriel	11	4
5	Walnut Grove Avenue / Valley Boulevard	Rosemead	14	3
6	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	12	26
7	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	23	15
8	Atlantic Boulevard / Pomona Boulevard	East Los Angeles	10	1
9	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	25	5
10	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	13	9

¹Seconds per vehicle

TABLE 6-28

2035 Dual-Bore (No Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Bicyclists*SR 710 North Study, Los Angeles County, California*

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	30
2	Durfee Avenue / Valley Boulevard	El Monte	13	13
3	Fair Oaks Avenue / Walnut Street	Pasadena	16	12
4	Walnut Grove Avenue / Valley Boulevard	Rosemead	12	2
5	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	14	28
6	Del Mar Avenue / Valley Boulevard	San Gabriel	23	3
7	Atlantic Boulevard / Pomona Boulevard	East Los Angeles	25	1
8	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	18	15
9	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	13	8
10	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	12	4

¹Seconds per vehicle

TABLE 6-29
2035 Dual-Bore (Toll) Variation of the Freeway Tunnel Alternative Intersections with Potential Effects on Bicyclists
SR 710 North Study, Los Angeles County, California

Rank	Intersection	Jurisdiction	Bicycles per Hour	Intersection Delay Change ¹
1	Rosemead Boulevard / Mission Drive	Rosemead	23	31
2	Durfee Avenue / Valley Boulevard	El Monte	13	11
3	Fair Oaks Avenue / Walnut Street	Pasadena	16	12
4	Del Mar Avenue / Valley Boulevard	San Gabriel	11	4
5	Walnut Grove Avenue / Valley Boulevard	Rosemead	14	3
6	Fair Oaks Avenue / SR 110 NB Off-Ramp	South Pasadena	23	28
7	Mednik Avenue / Cesar Chavez Avenue	East Los Angeles	12	15
8	Atlantic Boulevard / Pomona Boulevard	East Los Angeles	10	1
9	Arroyo Seco Parkway / Colorado Boulevard	Pasadena	25	9
10	Atlantic Boulevard / Whittier Boulevard	East Los Angeles	13	5

¹Seconds per vehicle

For Tables 6-11 to 6-19 and 6-21 to 6-29, the inclusion of an intersection on the list does not necessarily mean that there is a pedestrian or bicycle impact. Higher delays generally mean that speeds are reduced, which may increase safety for pedestrians and bicycles.

Adverse Effect and Potential Improvement Analysis

An adverse effect and potential improvement analysis was conducted to support the requirements of the environmental document. These analyses were based on the traffic operations analysis results discussed in Section 5. The results of the horizon year Build Alternatives were compared to the horizon year No Build Alternative to determine intersections and freeway segments with adverse effects.

The criteria are discussed in Section 7.1. The adverse effects are summarized in Section 7.2. Potential improvements to the identified adverse effects were studied and recommended based on feasibility. These improvements are summarized in Section 7.3.

7.1 Criteria

LOS is the standard measure that is used to identify potentially adverse transportation effects. LOS was used to compare the traffic performance of alternatives against the performance of the No Build Alternative. Because LOS has a quantitative basis, specific criteria were defined to identify adverse effects.

The criteria were as follows.

- There would be an adverse effect at an intersection if either of the following occurs:
 - The intersection is projected to operate at LOS E under a Build Alternative and the increase in delay over the No Build Alternative is 5 seconds or more; or
 - The intersection is projected to operate at LOS F under a Build Alternative and the increase in delay over the No Build Alternative is 2 seconds or more.
- There would be an adverse effect on a freeway segment if the following occurs:
 - The freeway segment is projected to operate at LOS F under a Build Alternative and the increase in traffic demand compared to the No Build Alternative is 2 percent or more.

7.2 Adverse Effects at Intersection and Freeway Segments by Alternative

Tables 7-1 through 7-9 are summaries of the adverse effects at intersections for each alternative. Tables 7-10 through 7-18 are summaries of the adverse effects on freeway segments for each alternative. Table 7-19 is a summary of the number of intersection and freeway adverse effects.

7.3 Potential Improvements at Intersection and Freeway Segments by Alternative

The right side of Tables 7-1 through 7-9 include descriptions of the potential improvements at intersections. Tables 7-10 through 7-18 include the potential improvements to freeway segments. Potential improvements were evaluated, and some were recommended for implementation in the Build Alternatives. Other improvements were not recommended; the tables provide rationale for those decisions. Reasons for not including some improvements include increased ROW acquisition, the need for aerial easements over the Union Pacific Railroad tracks, provision of any nominal traffic relief, and/or additional impacts to bridge structures. Table 7-20 is a summary of the number of potential improvements recommended for implementation for intersections and freeway segments.

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TABLE 7-1
Summary of 2035 TSM/TDM Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Atlantic Boulevard / Main Street	Signal	In the PM peak hour, the intersection delay is expected to increase from 46.2 seconds (LOS D) in the No Build Alternative to 57.6 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Atlantic Boulevard / Mission Road	Signal	In the PM peak hour, the intersection delay is expected to increase from 67.4 seconds (LOS E) in the No Build Alternative to 86.8 seconds (LOS F).	Add an eastbound through lane	No, this improvement is not recommended for implementation because it would require seven partial right-of-way acquisitions from adjacent residential and commercial properties.
Fremont Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 51.2 seconds (LOS D) in the No Build Alternative to 122.5 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 69.8 seconds (LOS E) in the No Build Alternative to 126.3 seconds (LOS F).	Add a westbound left turn lane, a northbound right turn lane and a southbound through lane	No, this improvement is not proposed for implementation because it would require five partial right-of-way acquisitions and an aerial easement with Union Pacific Railroad.
SR 710 NB Off-Ramp / Valley Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 33.5 seconds (LOS C) in the No Build Alternative to 547.6 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 17.2 seconds (LOS B) in the No Build Alternative to 622.9 seconds (LOS F).	Potential mitigation strategies that were evaluated include channelization/new turn lanes, a roundabout, and an elevated flyover structure	No improvement recommended. Channelization and a roundabout would not mitigate the traffic impacts without building a grade separation. A grade-separated roundabout or other flyover would require additional right-of-way and result in unacceptable secondary impacts.
Rosemead Boulevard / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 116.5 seconds (LOS F) in the No Build Alternative to 120.6 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 119.0 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 181.1 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Eagle Rock Boulevard / Verdugo Road/ Avenue 40	Signal	In the PM peak hour, the intersection delay is expected to increase from 50.0 seconds (LOS D) in the No Build Alternative to 61.5 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.

TABLE 7-1
Summary of 2035 TSM/TDM Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Huntington Drive / Monterey Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 53.7 seconds (LOS D) in the No Build Alternative to 96.4 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Rosemead Boulevard / Lower Azusa Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 26.5 seconds (LOS C) in the No Build Alternative to 100.9 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 25.3 seconds (LOS C) in the No Build Alternative to 59.9 seconds (LOS E).	Add a westbound left turn lane and a northbound right turn lane	No, this improvement is not proposed for implementation because it would require partial right-of-way acquisition from a nearby high school.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 86.2 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the No Build Alternative to 72.1 seconds (LOS E).	Add an eastbound left turn lane, an eastbound right turn lane and a northbound left turn lane	No, this improvement is not proposed for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Rosemead Boulevard / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 56.0 seconds (LOS E) in the No Build Alternative to 63.8 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 124.0 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 66.7 seconds (LOS E) in the No Build Alternative to 79.9 seconds (LOS E).	Add a northbound through lane	No, this improvement is not proposed for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
Del Mar Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 68.5 seconds (LOS E) in the No Build Alternative to 79.0 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Atlantic Boulevard / Huntington Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 59.1 seconds (LOS E) in the No Build Alternative to 76.2 seconds (LOS E).	Add a westbound left turn lane and a northbound left turn lanes	No, this improvement is not proposed for implementation because it would require partial right-of-way acquisition from an adjacent restaurant.

TABLE 7-1
Summary of 2035 TSM/TDM Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 77.5 seconds (LOS E).	Add an eastbound left turn lane, eastbound right turn lane and a northbound left lane	Yes, recommended for implementation.
Marengo Avenue / Valley Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 46.8 seconds (LOS D) in the No Build Alternative to 59.7 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Concord Avenue / Alhambra Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 40.8 seconds (LOS E) in the No Build Alternative to >300 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 113.2 seconds (LOS F) in the No Build Alternative to >300 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-2
Summary of 2035 BRT Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Atlantic Boulevard / Mission Road	Signal	In the PM peak hour, the intersection delay is expected to increase from 67.4 seconds (LOS E) in the No Build Alternative to 89.4 seconds (LOS F).	Add an eastbound through lane	No, this improvement is not recommended for implementation because it would require seven partial right-of-way acquisitions from adjacent residential and commercial properties.
Fremont Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 51.2 seconds (LOS D) in the No Build Alternative to 122.3 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 69.8 seconds (LOS E) in the No Build Alternative to 118.7 seconds (LOS F).	Add a westbound left turn lane and a northbound right turn lane	No, this improvement is not recommended for implementation because it would require five partial right-of-way acquisitions and an aerial easement with Union Pacific Railroad.
SR 710 NB Off-Ramp / Valley Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 33.5 seconds (LOS C) in the No Build Alternative to 623.7 seconds (LOS F).	Potential mitigation strategies that were evaluated include channelization/new turn lanes, a roundabout, and an elevated flyover structure	No improvement recommended. Channelization and a roundabout would not mitigate the traffic impacts without building a grade separation. A grade-separated roundabout or other flyover would require additional right-of-way and result in unacceptable secondary impacts.
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 122.7 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 177.3 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation
Huntington Drive / Monterey Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 53.7 seconds (LOS D) in the No Build Alternative to 95.6 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation
Rosemead Boulevard / Lower Azusa Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 26.5 seconds (LOS C) in the No Build Alternative to 55.5 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation

TABLE 7-2
Summary of 2035 BRT Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 87.3 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the No Build Alternative to 67.1 seconds (LOS E).	Add a westbound left turn lane, a westbound right turn lane and a northbound right turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 128.4 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 66.7 seconds (LOS E) in the No Build Alternative to 79.3 seconds (LOS E).	Add a northbound through lane	No, this improvement is not recommended for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
Del Mar Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 68.5 seconds (LOS E) in the No Build Alternative to 77.1 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation
Atlantic Boulevard / Huntington Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 59.1 seconds (LOS E) in the No Build Alternative to 70.5 seconds (LOS E).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require a partial right-of-way acquisition from an adjacent restaurant.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 61.7 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation
Concord Avenue / Alhambra Avenue	TWSC	In the PM peak hour, the intersection delay is expected to increase from 67.4 seconds (LOS E) in the No Build Alternative to 89.4 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation

TABLE 7-3
Summary of 2035 LRT Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Fremont Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 51.2 seconds (LOS D) in the No Build Alternative to 69.8 seconds (LOS E). In the PM peak hour, the intersection delay is expected to increase from 69.8 seconds (LOS E) in the No Build Alternative to 95.7 seconds (LOS F).	Add a westbound left turn lane and northbound right turn lane	No, this improvement is not recommended for implementation because it would require five partial right-of-way acquisitions and an aerial easement with Union Pacific Railroad.
SR 710 NB Off-Ramp / Valley Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 33.5 seconds (LOS C) in the No Build Alternative to 447.7 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 17.2 seconds (LOS B) in the No Build Alternative to 562.5 seconds (LOS F).	Potential mitigation strategies that were evaluated include channelization/new turn lanes, a roundabout, and an elevated flyover structure	No improvement recommended. Channelization and a roundabout would not mitigate the traffic impacts without building a grade separation. A grade-separated roundabout or other flyover would require additional right-of-way and result in unacceptable secondary impacts.
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 126.4 seconds (LOS F).	Add a northbound right turn lane	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 176.1 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Huntington Drive / Monterey Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 53.7 seconds (LOS D) in the No Build Alternative to 85.4 seconds (LOS F).	Add an eastbound left turn lane and a northbound left turn lane	No, this improvement is not recommended for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
Pasadena Avenue / Broadway	Signal	In the AM peak hour, the intersection delay is expected to increase from 192.9 seconds (LOS F) in the No Build Alternative to 199.9 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Rosemead Boulevard / Lower Azusa Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 26.5 seconds (LOS C) in the No Build Alternative to 58.1 seconds (LOS E).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require partial right-of-way acquisition from an adjacent nearby high school.

TABLE 7-3
Summary of 2035 LRT Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 95.3 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the No Build Alternative to 70.2 seconds (LOS E).	Add an eastbound left turn lane, an eastbound right turn lane and a southbound right turn	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 167.4 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 66.7 seconds (LOS E) in the No Build Alternative to 92.6 seconds (LOS F).	Add a northbound through lane	No, this improvement is not recommended for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
Del Mar Avenue / Valley Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 41.4 seconds (LOS D) in the No Build Alternative to 49.4 seconds (LOS D).	Optimize the signal system	Yes, recommended for implementation.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 62.3 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Garfield Avenue / Norwood Place	TWSC	In the AM peak hour, the intersection delay is expected to increase from 10.7 seconds (LOS B) in the No Build Alternative to 39.5 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
Concord Avenue / Alhambra Avenue	TWSC	In the PM peak hour, the intersection delay is expected to increase from 113.2 seconds (LOS F) in the No Build Alternative to 123.7 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-4

Summary of 2035 Single-Bore (with Toll) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the no-build scenario to 119.9 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the no-build scenario to 190.5 seconds (LOS F).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Orange Grove Boulevard/ Colorado Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 19.7 seconds (LOS B) in the no-build scenario to 55.1 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the no-build scenario to 82.8 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the no-build scenario to 69.4 seconds (LOS E).	Add an eastbound left turn lane, a northbound left turn lane and an eastbound right turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Rosemead Boulevard / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 56 seconds (LOS E) in the no-build scenario to 61.8 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the no-build scenario to 118.6 seconds (LOS F).	Add a northbound through lane	No, this improvement is not recommended for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the no-build scenario to 86.2 seconds (LOS F).	Add a westbound left turn lane and an eastbound right turn lane	Yes, recommended for implementation.
Marengo Avenue / Valley Boulevard	Signal	In the AM peak hour, the intersection delay is expected to increase from 46.8 seconds (LOS D) in the no-build scenario to 55.4 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Fremont Avenue / Norwood Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 71.6 seconds (LOS F) in the no-build scenario to 112.6 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-5

Summary of 2035 Single-Bore (with Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 120.5 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 187 seconds (LOS F).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Pasadena Avenue / Broadway	Signal	In the AM peak hour, the intersection delay is expected to increase from 192.9 seconds (LOS F) in the No Build Alternative to 195.5 seconds (LOS F).	Add an eastbound left turn lane	No, this improvement is not recommended for implementation because it would require an aerial easement over the rail tracks on both sides of the Broadway overcrossing which would require railroad coordination and potential impacts to train operations.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 81.2 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the No Build Alternative to 65.7 seconds (LOS E).	Add an eastbound left turn lane, a northbound left turn lane and an eastbound right turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 118.5 seconds (LOS F). In the PM peak hour, the intersection delay is expected to increase from 66.7 seconds (LOS E) in the No Build Alternative to 77.9 seconds (LOS E).	Add a northbound through lane	No, this improvement is not recommended for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 68.5 seconds (LOS E).	Add a westbound left turn lane	Yes, recommended for implementation.

TABLE 7-5

Summary of 2035 Single-Bore (with Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Fremont Avenue / Norwood Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 71.6 seconds (LOS F) in the No Build Alternative to 89.4 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
Concord Avenue / Alhambra Avenue	Two-Way Stop Control	In the PM peak hour, the intersection delay is expected to increase from 113.2 seconds (LOS F) in the No Build Alternative to OVF seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-6

Summary of 2035 Single-Bore (with Toll and Express Bus) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 123.8 seconds (LOS F).	Add a northbound right turn lane	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 191.3 seconds (LOS F).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 82.4 seconds (LOS F).	Add an eastbound left turn lane, a northbound left turn lane and an eastbound right turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 113.4 seconds (LOS F).	Add a northbound through lane	No, this improvement is not recommended for implementation because it would require two partial right-of-way acquisitions from adjacent businesses.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 69.4 seconds (LOS E).	Add a westbound left turn lane	Yes, recommended for implementation.
Fremont Avenue / Norwood Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 71.6 seconds (LOS F) in the No Build Alternative to 118.7 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-7

Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 122.5 seconds (LOS F).	Add a northbound right turn lane	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 186.7 seconds (LOS F).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Figueroa Street / Avenue 26	Signal	In the AM peak hour, the intersection delay is expected to increase from 53.4 seconds (LOS D) in the No Build Alternative to 58.6 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 76.4 seconds (LOS E). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the No Build Alternative to 62.7 seconds (LOS E).	Add an eastbound left turn lane, a northbound left turn lane and an eastbound right turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 105.9 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 61.9 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Fremont Avenue / Norwood Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 71.6 seconds (LOS F) in the No Build Alternative to 95.3 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
Garfield Avenue / Norwood Place	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 10.7 seconds (LOS B) in the No Build Alternative to 35.1 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-7
Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 EB Ramps / Berkshire Place	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 15.3 seconds (LOS C) in the No Build Alternative to 42.7 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
I-210 WB Ramps / Berkshire Place	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 18.5 seconds (LOS C) in the No Build Alternative to 39.7 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
I-210 EB Ramps / Mountain Street	Two-Way Stop Control	In the PM peak hour, the intersection delay is expected to increase from 21.3 seconds (LOS C) in the No Build Alternative to 38 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-8

Summary of 2035 Dual-Bore (without Toll and No Trucks) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the no-build scenario to 124.3 seconds (LOS F).	Add a northbound right turn lane	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the no-build scenario to 191.1 seconds (LOS F).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the no-build scenario to 75.7 seconds (LOS E). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the no-build scenario to 62.1 seconds (LOS E).	Add an eastbound left turn lane, a northbound left turn lane and an eastbound right turn	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the no-build scenario to 99.6 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the no-build scenario to 59.5 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Fremont Avenue / Norwood Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 71.6 seconds (LOS F) in the no-build scenario to 85.8 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
Garfield Avenue / Norwood Place	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 10.7 seconds (LOS B) in the no-build scenario to 35.5 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
I-210 EB Ramps / Mountain Street	Two-Way Stop Control	In the PM peak hour, the intersection delay is expected to increase from 21.3 seconds (LOS C) in the no-build scenario to 37.9 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
I-210 WB Ramps / Mountain Street	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 15 seconds (LOS C) in the no-build scenario to 36.0 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-9

Summary of 2035 Dual-Bore (with Toll) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
Durfee Avenue / Valley Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 111.1 seconds (LOS F) in the No Build Alternative to 122.5 seconds (LOS F).	Add a northbound right turn lane	Yes, recommended for implementation.
Broadway / Colorado Boulevard	Signal	In the PM peak hour, the intersection delay is expected to increase from 160.1 seconds (LOS F) in the No Build Alternative to 186.7 seconds (LOS F).	Add a westbound left turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Figueroa Street / Avenue 26	Signal	In the AM peak hour, the intersection delay is expected to increase from 53.4 seconds (LOS D) in the No Build Alternative to 58.6 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Rosemead Boulevard / Mission Drive	Signal	In the AM peak hour, the intersection delay is expected to increase from 45.5 seconds (LOS D) in the No Build Alternative to 76.4 seconds (LOS E). In the PM peak hour, the intersection delay is expected to increase from 50.3 seconds (LOS D) in the No Build Alternative to 62.7 seconds (LOS E).	Add an eastbound left turn lane, a northbound left turn lane and an eastbound right turn lane	No, this improvement is not recommended for implementation because it would require one partial right-of-way acquisition from an adjacent business.
Del Mar Avenue / Mission Road	Signal	In the AM peak hour, the intersection delay is expected to increase from 97.3 seconds (LOS F) in the No Build Alternative to 105.9 seconds (LOS F).	Optimize the signal system	Yes, recommended for implementation.
San Gabriel Boulevard / Huntington Drive	Signal	In the PM peak hour, the intersection delay is expected to increase from 52.4 seconds (LOS D) in the No Build Alternative to 61.9 seconds (LOS E).	Optimize the signal system	Yes, recommended for implementation.
Fremont Avenue / Norwood Avenue	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 71.6 seconds (LOS F) in the No Build Alternative to 95.3 seconds (LOS F).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
Garfield Avenue / Norwood Place	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 10.7 seconds (LOS B) in the No Build Alternative to 35.1 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-9
Summary of 2035 Dual-Bore (with Toll) Variation of the Freeway Tunnel Alternative Intersection Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Intersection Description	Existing Traffic Control	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 EB Ramps / Berkshire Place	All-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 15.3 seconds (LOS C) in the No Build Alternative to 43.9 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
I-210 WB Ramps / Berkshire Place	Two-Way Stop Control	In the AM peak hour, the intersection delay is expected to increase from 18.5 seconds (LOS C) in the No Build Alternative to 40.1 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.
I-210 EB Ramps / Mountain Street	Two-Way Stop Control	In the PM peak hour, the intersection delay is expected to increase from 21.3 seconds (LOS C) in the No Build Alternative to 39.9 seconds (LOS E).	Signalize the existing stop-controlled intersection	Yes, recommended for implementation.

TABLE 7-10

Summary of 2035 TSM/TDM Alternative Freeway Segment Potential Impacts and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Potential Impact	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-5 northbound between the SR 110 NB off-ramp and the Pasadena Avenue/Broadway on-ramp	In the PM peak hour, the freeway demand is expected to increase from 8920 vph (LOS F) in the No Build Alternative to 9110 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 7770 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	No, this improvement is not proposed for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7260 vph (LOS F).		
I-710 southbound between the WB I-10 off-ramp and the WB I-10 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 3130 vph (LOS C) in the No Build Alternative to 4800 vph (LOS F).	Add a lane between the WB I-10 off-ramp and the WB I-10 on-ramp. Modify the WB I-10 on-ramp to one lane	No, this improvement is not proposed for implementation due to impacts to transit movements and secondary impacts due to major construction of three bridge structures.
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the No Build Alternative to 6290 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp and the SR 60 off-ramp	No, this improvement is not proposed for implementation This mitigation is rejected due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
	In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the No Build Alternative to 8200 vph (LOS F).		
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the No Build Alternative to 7700 vph (LOS F).	Add a deceleration lane for the SR 60 off-ramp and add a lane between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	No, this improvement is not proposed for implementation due to secondary impacts from major construction of one bridge structure.

TABLE 7-10
Summary of 2035 TSM/TDM Alternative Freeway Segment Potential Impacts and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Potential Impact	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the No Build Alternative to 6620 vph (LOS F).	Add a lane starting at the Cesar Chavez Boulevard on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not proposed for implementation due to secondary impacts from major construction of seven bridge structures.
I-710 southbound between the Third Street on-ramp and the Third Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6570 vph (LOS F) in the No Build Alternative to 6710 vph (LOS F).		

Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)

vph = vehicles per hour

TABLE 7-11

Summary of 2035 BRT Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-5 northbound between the SR 110 NB off-ramp and the Pasadena Avenue/Broadway on-ramp	In the PM peak hour, the freeway demand is expected to increase from 8920 vph (LOS F) in the No Build Alternative to 9110 vph (LOS F).		
I-5 northbound between the Western Avenue off-ramp and the Western Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8960 vph (LOS F) in the No Build Alternative to 9150 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation
SR 60 westbound between the NB I-5/US 101/Soto Street off-ramp and the NB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 5880 vph (LOS F) in the No Build Alternative to 6000 vph (LOS F).		
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 7720 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7210 vph (LOS F).		
I-710 southbound between the WB I-10 off-ramp and the WB I-10 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 2210 vph (LOS B) in the No Build Alternative to 4080 vph (LOS E). In the PM peak hour, the freeway demand is expected to increase from 3130 vph (LOS C) in the No Build Alternative to 4790 vph (LOS F).	Add a lane between the WB I-10 off-ramp and the WB I-10 on-ramp. Modify the WB I-10 on-ramp to one lane	No, this improvement is not recommended for implementation due to impacts to transit movements and secondary impacts due to major construction of three bridge structures.

TABLE 7-11
Summary of 2035 BRT Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the No Build Alternative to 6270 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the No Build Alternative to 8220 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5360 vph (LOS D) in the No Build Alternative to 5870 vph (LOS E). In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the No Build Alternative to 7720 vph (LOS F).		
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the No Build Alternative to 6690 vph (LOS F).		
I-710 southbound between the Third Street on-ramp and the Third Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6570 vph (LOS F) in the No Build Alternative to 6770 vph (LOS F).		
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 (LOS E) in the No Build Alternative to 6580 (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation
I-5 northbound between the SR 110 NB off-ramp and the Pasadena Avenue/Broadway on-ramp	In the PM peak hour, the freeway demand is expected to increase from 8920 vph (LOS F) in the No Build Alternative to 9110 vph (LOS F).		
I-5 southbound between the Western Avenue off-ramp and the Western Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8960 vph (LOS F) in the No Build Alternative to 9150 vph (LOS F).		
Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)			
vph = vehicles per hour			

TABLE 7-12
Summary of 2035 LRT Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-10 westbound between the Garvey Avenue/Durfee Avenue off-ramp and the NB Peck Road off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8210 vph (LOS E) in the No Build Alternative to 8850 vph (LOS F).	Add a lane between the Garvey Avenue off-ramp and the Peck Road off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts, impacts to rail movements, and secondary impacts due to major construction of seven bridge structures, a retaining wall, and a sound wall.
I-10 westbound between the Santa Anita Avenue on-ramp and the Temple City Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8370 vph (LOS F) in the No Build Alternative to 8670 vph (LOS F).	Add an auxiliary lane between the Santa Anita Avenue on-ramp and Temple City Boulevard off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts, impacts to transit movements, impacts to Fletch Park, and secondary impacts due to major construction of four bridge structures, retaining wall, and sound wall.
I-10 westbound between the Temple City Boulevard on-ramp and the Rosemead Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8550 vph (LOS F) in the No Build Alternative to 8830 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7180 vph (LOS D) in the No Build Alternative to 7480 vph (LOS E).	Add an auxiliary lane between the Temple City Boulevard on-ramp and the Rosemead Boulevard off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-10 westbound between the Rosemead Boulevard on-ramp and the Walnut Grove Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8870 vph (LOS F) in the No Build Alternative to 9160 vph (LOS F).		

TABLE 7-12
Summary of 2035 LRT Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-10 westbound between the Walnut Grove Avenue on-ramp and the San Gabriel Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8890 vph (LOS F) in the No Build Alternative to 9140 vph (LOS F).		
I-10 westbound between the Garfield Avenue on-ramp and the Atlantic Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8510 vph (LOS F) in the No Build Alternative to 8710 vph (LOS F).		
I-10 westbound between the Atlantic Boulevard on-ramp and the Fremont Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8430 vph (LOS F) in the No Build Alternative to 8670 vph (LOS F).		
SR 134 westbound between the San Fernando Road on-ramp and the NB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 4640 vph (LOS F) in the No Build Alternative to 4750 vph (LOS F).		
I-5 northbound between the State Street on-ramp and the I-10 WB on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8390 vph (LOS F) in the No Build Alternative to 8560 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-5 southbound between the Stadium Way off-ramp and the SR 2 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6490 vph (LOS E) in the No Build Alternative to 6690 vph (LOS F).		
I-605 southbound between the I-10 on-ramp and the Valley Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8660 vph (LOS F) in the No Build Alternative to 8860 vph (LOS F).		
I-605 southbound between the Valley Boulevard on-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9140 vph (LOS F) in the No Build Alternative to 9340 vph (LOS F).		
SR 60 westbound between the I-710 on-ramp and the Downey Road off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9820 vph (LOS F) in the No Build Alternative to 10,020 vph (LOS F).		
I-710 northbound between the South of NB I-5 off-ramp and the NB I-5 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 11,420 vph (LOS F) in the No Build Alternative to 11,660 vph (LOS F).		

TABLE 7-12
Summary of 2035 LRT Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 northbound between the NB I-5 off-ramp and the Olympic Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7940 vph (LOS F) in the No Build Alternative to 8120 vph (LOS F).		
	In the PM peak hour, the freeway demand is expected to increase from 7620 vph (LOS F) in the No Build Alternative to 7800 vph (LOS F).		
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 7600 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7050 vph (LOS F).		
Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)			
vph = vehicles per hour			

TABLE 7-13

Summary of 2035 Single-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Mitigation	Is the improvement recommended for implementation? If not recommended for implementation, why not?
SR 134 westbound between the SB SR 2 on-ramp and the Glendale Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7560 vph (LOS F) in the no-build scenario to 7720 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
SR 134 westbound between the Glendale on-ramp and the Brand Boulevard/Central Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7570 vph (LOS D) in the no-build scenario to 7780 vph (LOS F).		
I-210 eastbound between the Marengo Avenue on-ramp and the Lake Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9650 vph (LOS E) in the no-build scenario to 10,060 vph (LOS F).	Braid ramps around the Marengo Avenue interchange	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one structure and two retaining walls.
I-120 westbound between the Lake Avenue on-ramp and the Marengo Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,750 vph (LOS F) in the no-build scenario to 11,190 vph (LOS F).	Add an auxiliary lane between the Lake Avenue on-ramp and the Marengo Avenue off-ramp, add one lane to the Lake Avenue on-ramp and the Marengo Avenue off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of three tie-back walls at the El Molino Avenue overcrossing, the utility overcrossing, and the Los Robles Avenue overcrossing.
I-5 southbound between the Western Avenue off-ramp and the Western Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8960 vph (LOS F) in the no-build scenario to 9230 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-5 southbound between the Western Avenue on-ramp and the SR 134 EB off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9920 vph (LOS F) in the no-build scenario to 10,130 vph (LOS F).		
I-5 southbound between the Stadium Way off-ramp and the SR 2 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6490 vph (LOS E) in the no-build scenario to 6680 vph (LOS F).		
I-5 southbound between the SR 60 EB off-ramp and the Soto Street off-ramp	In the AM peak hour, the freeway demand is expected to increase from 4350 vph (LOS F) in the no-build scenario to 4510 vph (LOS F).		

TABLE 7-13

Summary of 2035 Single-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Mitigation	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-5 southbound between the Seventh Street on-ramp and the Eight on-ramp	In the AM peak hour, the freeway demand is expected to increase from 4070 vph (LOS E) in the no-build scenario to 4200 vph (LOS F).		
I-5 southbound between the Eighth Street on-ramp and the SR 60 EB on-ramp	In the AM peak hour, the freeway demand is expected to increase from 4250 vph (LOS F) in the no-build scenario to 4370 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
SR 60 westbound between the NB Atlantic Boulevard on-ramp and the SB Atlantic Boulevard on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6590 vph (LOS B) in the no-build scenario to 6740 vph (LOS F).		
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the no-build scenario to 8070 vph (LOS F).		No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the no-build scenario to 7460 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the no-build scenario to 6430 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the no-build scenario to 8310 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the no-build scenario to 7730 vph (LOS F).		
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the no-build scenario to 6980 vph (LOS F).		
I-710 southbound between the Third Street on-ramp and the Third Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6570 vph (LOS F) in the no-build scenario to 7010 vph (LOS F).	Add a lane starting at the Cesar Chavez Avenue on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of seven bridge structures.

TABLE 7-13
Summary of 2035 Single-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Mitigation	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 vph (LOS E) in the no-build scenario to 6820 vph (LOS F).	Add a lane between the Third Street off-ramp and the SR 60 on-ramp	No, this improvement is not recommended for implementation due secondary impacts from major construction of one bridge structure.

Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)
 vph = vehicles per hour

TABLE 7-14

Summary of 2035 Single-Bore (with Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 eastbound between the Polk Street on-ramp and the Hubbard Street off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6410 vph (LOS F) in the No Build Alternative to 6550 vph (LOS F).		
I-210 eastbound between the Hubbard Street on-ramp and the Maclay Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7430 vph (LOS F) in the No Build Alternative to 7580 vph (LOS F).		
I-210 eastbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 7010 vph (LOS F) in the No Build Alternative to 7170 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-210 eastbound between the Pennsylvania Avenue off-ramp and the Pennsylvania Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8330 vph (LOS F) in the No Build Alternative to 8530 vph (LOS F).		
I-210 eastbound between the Marengo Avenue on-ramp and the Lake Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9650 vph (LOS E) in the No Build Alternative to 10,110 vph (LOS F).	Braid ramps around the Marengo Avenue interchange	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one structure and two retaining walls.
I-210 westbound between the Lake Avenue on-ramp and the Marengo Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,750 vph (LOS F) in the No Build Alternative to 11,060 vph (LOS F).	Add an auxiliary lane between the Lake Avenue on-ramp and the Marengo Avenue off-ramp, add one lane to the Lake Avenue on-ramp and the Marengo Avenue off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of three tie-back walls at the El Molino Avenue overcrossing, the utility overcrossing, and Los Robles Avenue overcrossing.

TABLE 7-14

Summary of 2035 Single-Bore (with Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-5 southbound between the Western Avenue off-ramp and the Western Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8960 vph (LOS F) in the No Build Alternative to 9170 vph (LOS F).		
SR 60 westbound between the NB Atlantic Boulevard on-ramp and the SB Atlantic Boulevard on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6590 vph (LOS B) in the No Build Alternative to 6740 vph (LOS F).		
I-710 northbound between the Olympic Boulevard on-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8360 vph (LOS F) in the No Build Alternative to 8550 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 8130 vph (LOS F) in the No Build Alternative to 8350 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 8180 vph (LOS F).		No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7570 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the No Build Alternative to 6610 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the No Build Alternative to 8450 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the No Build Alternative to 7860 vph (LOS F).		

TABLE 7-14
Summary of 2035 Single-Bore (with Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the No Build Alternative to 7060 vph (LOS F).	Add a lane starting at the Cesar Chavez Avenue on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of seven bridge structures.
I-710 southbound between the Third Street on-ramp and the Third Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6570 vph (LOS F) in the No Build Alternative to 7090 vph (LOS F).		
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 vph (LOS E) in the No Build Alternative to 6880 vph (LOS F).	Add a lane between the Third Street off-ramp and the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one bridge structure.
I-710 southbound between the SR 60 on-ramp and the Whittier Boulevard /Olympic Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7890 vph (LOS F) in the No Build Alternative to 8070 vph (LOS F).		
	In the PM peak hour, the freeway demand is expected to increase from 10,500 vph (LOS F) in the No Build Alternative to 10,720 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 southbound between the Whittier Boulevard /Olympic Boulevard on-ramp and the SB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6310 vph (LOS F) in the No Build Alternative to 6480 vph (LOS F).		

Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)

vph = vehicles per hour

TABLE 7-15

Summary of 2035 Single-Bore (with Toll and Express Bus) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
SR 134 westbound between the SB SR 2 on-ramp and the Glendale Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7560 vph (LOS F) in the No Build Alternative to 7730 vph (LOS F).		
SR 134 westbound between the Glendale Avenue on-ramp and the Brand Boulevard/Central Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7570 vph (LOS D) in the No Build Alternative to 7760 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-210 eastbound between the Pennsylvania Avenue off-ramp and the Pennsylvania Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8330 vph (LOS F) in the No Build Alternative to 8510 vph (LOS F).		
I-210 eastbound between the Marengo Avenue on-ramp and the Lake Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9650 vph (LOS E) in the No Build Alternative to 10,090 vph (LOS F).	Braid ramps around the Marengo Avenue interchange	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one structure and two retaining walls.
I-210 westbound between the Lake Avenue on-ramp and the Marengo Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,750 vph (LOS F) in the No Build Alternative to 11,030 vph (LOS F).	Add an auxiliary lane between the Lake Avenue on-ramp and the Marengo Avenue off-ramp, add one lane to the Lake Avenue on-ramp and the Marengo Avenue off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of three tie-back walls at the El Molino Avenue overcrossing, the utility overcrossing, and the Los Robles Avenue overcrossing.
I-5 southbound between the Western Avenue off-ramp and the Western Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8960 vph (LOS F) in the No Build Alternative to 9230 vph (LOS F).		
I-5 southbound between the Western Avenue on-ramp and the SR 134 EB off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9920 vph (LOS F) in the No Build Alternative to 10,130 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-5 southbound between the Stadium Way off-ramp and the SR 2 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6490 vph (LOS E) in the No Build Alternative to 6630 vph (LOS F).		

TABLE 7-15
Summary of 2035 Single-Bore (with Toll and Express Bus) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-5 southbound between the SR 60 EB off-ramp and the Soto Street off-ramp	In the AM peak hour, the freeway demand is expected to increase from 4350 vph (LOS F) in the No Build Alternative to 4460 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
SR 60 westbound between the NB Atlantic Boulevard on-ramp and the SB Atlantic Boulevard on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6590 vph (LOS B) in the No Build Alternative to 6740 vph (LOS F).		
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 8090 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7490 vph (LOS F).		
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the No Build Alternative to 6540 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
	In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the No Build Alternative to 8330 vph (LOS F).		
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the No Build Alternative to 7750 vph (LOS F).	Add a lane starting at the Cesar Chavez Avenue on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of seven bridge structures.
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the No Build Alternative to 6970 vph (LOS F).		
I-710 southbound between the Third Street on-ramp and the Third Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6570 vph (LOS F) in the No Build Alternative to 7010 vph (LOS F).		

TABLE 7-15

Summary of 2035 Single-Bore (with Toll and Express Bus) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 vph (LOS E) in the No Build Alternative to 6800 vph (LOS F).	Add a lane between the Third Street off-ramp and the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one bridge structure.
I-710 southbound between the SR 60 on-ramp and the Whittier Boulevard /Olympic Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7890 vph (LOS F) in the No Build Alternative to 8060 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 southbound between the Whittier Boulevard /Olympic Boulevard on-ramp and the SB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6310 vph (LOS F) in the No Build Alternative to 6460 vph (LOS F).		

Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)
vph = vehicles per hour

TABLE 7-16

Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-10 westbound between the SB I-605 on-ramp and the Garvey Avenue/Durfee Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9170 vph (LOS F) in the No Build Alternative to 9260 vph (LOS E). In the PM peak hour, the freeway demand is expected to increase from 7510 vph (LOS F) in the No Build Alternative to 7680 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
SR 134 westbound between the Linda Vista Avenue /San Rafael Avenue on-ramp and the Figueroa/Colorado off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7840 vph (LOS E) in the No Build Alternative to 8420 vph (LOS F).	Add an auxiliary lane between the San Rafael Avenue on-ramp and the Figueroa Street off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to the construction of a retaining wall along the north side of SR 134 near Figueroa Street off-ramp.
SR 134 westbound between the SB SR 2 on-ramp and the Glendale Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7560 vph (LOS F) in the No Build Alternative to 7950 vph (LOS F).	Add a lane starting at the Harvey Drive on-ramp and drop it after the Central Avenue off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to major construction of four realignments, six bridge reconstruction, and several retaining and sound walls.
SR 134 westbound between the Glendale Avenue on-ramp and the Brand Boulevard/Central Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7570 vph (LOS D) in the No Build Alternative to 8050 vph (LOS F).		

TABLE 7-16

Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 eastbound between the Polk Street on-ramp and the Hubbard Street off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6410 vph (LOS F) in the No Build Alternative to 6790 vph (LOS F).		
I-210 eastbound between the Hubbard Street off-ramp and the Hubbard Street on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6040 vph (LOS E) in the No Build Alternative to 6430 vph (LOS F).		No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to major construction of seven realignments, three widenings, and two reconstructions, as well as several tie-back and retaining walls.
I-210 eastbound between the Hubbard Street on-ramp and the Maclay Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7430 vph (LOS F) in the No Build Alternative to 7790 vph (LOS F).	Add a lane between the Polk Street on-ramp and the Paxton Street off-ramp	
I-210 eastbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 7010 vph (LOS F) in the No Build Alternative to 7410 vph (LOS F).		
I-210 eastbound between the Maclay Avenue on-ramp and the WB SR118 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8030 vph (LOS F) in the No Build Alternative to 8420 vph (LOS F).		
I-210 eastbound between the Pennsylvania Avenue off-ramp and the Pennsylvania Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8330 vph (LOS F) in the No Build Alternative to 8710 vph (LOS F).		No, this improvement is not recommended for implementation due to secondary impacts due to major construction of two tie-back walls at the Ramsdell and Rosemont overcrossings, and a retaining wall along the span of Mayfield Avenue.
I-210 eastbound between the Pennsylvania Avenue on-ramp and the La Crescenta Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 9450 vph (LOS F) in the No Build Alternative to 9830 vph (LOS F).	Add a lane between the Pennsylvania Avenue off-ramp and the Ocean view Boulevard off-ramp	
I-210 eastbound between the La Crescenta Avenue on-ramp and the Ocean View Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,570 vph (LOS F) in the No Build Alternative to 10,950 vph (LOS F).		
I-210 eastbound between the Lake Avenue on-ramp and the Marengo Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,750 vph (LOS F) in the No Build Alternative to 11,150 vph (LOS F).	Add an auxiliary lane between the Lake Avenue on-ramp and the Marengo Avenue off-ramp, add one lane to the Lake Avenue on-ramp and the Marengo Avenue off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of three tie-back walls at the El Molino Ave overcrossing, the utility overcrossing, and Los Robles Ave overcrossing.

TABLE 7-16
Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 westbound between the EB SR 118 on-ramp and the Maclay Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7280 vph (LOS F) in the No Build Alternative to 7490 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-210 westbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6280 vph (LOS E) in the No Build Alternative to 6490 vph (LOS F).		
I-210 westbound between the Maclay Avenue on-ramp and the Hubbard off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6590 vph (LOS F) in the No Build Alternative to 6790 vph (LOS F).		
I-210 westbound between the Hubbard Street on-ramp and the Polk Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 5840 vph (LOS E) in the No Build Alternative to 6050 vph (LOS F).		
I-5 northbound between the SR 2 NB off-ramp and the SR 2 SB off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9590 vph (LOS F) in the No Build Alternative to 9840 vph (LOS F).		
I-5 northbound between the SR 2 SB off-ramp and the SR 2 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 9730 vph (LOS F) in the No Build Alternative to 9980 vph (LOS F).		
I-5 southbound between the Stadium Way off-ramp and the SR 2 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6490 vph (LOS E) in the No Build Alternative to 6720 vph (LOS F).		
I-710 northbound between the Olympic Boulevard on-ramp and the SR 60 off-ramp	In the PM peak hour, the freeway demand is expected to increase from 8130 vph (LOS F) in the No Build Alternative to 8390 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 8170 vph (LOS F).		
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7660 vph (LOS F).		

TABLE 7-16
Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 northbound between the I-10 off-ramp and the EB I-10 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 2330 vph (LOS C) in the No Build Alternative to 4830 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 1490 vph (LOS B) in the No Build Alternative to 4190 vph (LOS E).	Add a lane between the I-10 off-ramp and the EB I-10 on-ramp	No, this improvement is not recommended for implementation due to impacts to transit movements and secondary impacts due to major construction of five bridge structures.
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the No Build Alternative to 7060 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the No Build Alternative to 8420 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5360 vph (LOS D) in the No Build Alternative to 6500 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the No Build Alternative to 7810 vph (LOS F).		
I-710 southbound between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	In the PM peak hour, the freeway demand is expected to increase from 5770 vph (LOS E) in the No Build Alternative to 6840 vph (LOS F).	Add a deceleration lane for the SR 60 off-ramp and add a lane between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one bridge structure.
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the No Build Alternative to 7420 vph (LOS F).	Add a lane starting at the Cesar Chavez Avenue on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of seven bridge structures.
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 vph (LOS E) in the No Build Alternative to 7270 vph (LOS F).	Add a lane between the Third Street off-ramp and the SR 60 on-ramp	No, this improvement is not recommended for implementation due secondary impacts from major construction of one bridge structure.

TABLE 7-16

Summary of 2035 Dual-Bore (without Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the SR 60 on-ramp and the Whittier Boulevard /Olympic Boulevard off-ramp	<p>In the AM peak hour, the freeway demand is expected to increase from 7890 vph (LOS F) in the No Build Alternative to 8130 vph (LOS F).</p> <p>In the PM peak hour, the freeway demand is expected to increase from 10,500 vph (LOS F) in the No Build Alternative to 10,770 vph (LOS F).</p>	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 southbound between the Whittier Boulevard /Olympic Boulevard on-ramp and the SB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6310 vph (LOS F) in the No Build Alternative to 6510 vph (LOS F).		

Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)
vph = vehicles per hour

TABLE 7-17

Summary of 2035 Dual-Bore (without Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-10 westbound between the SB I-605 on-ramp and the Garvey Avenue/Durfee Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 9170 vph (LOS F) in the no-build scenario to 9280 vph (LOS E). In the PM peak hour, the freeway demand is expected to increase from 7510 vph (LOS F) in the no-build scenario to 7680 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
SR 134 westbound between the SB SR 2 on-ramp and the Glendale Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7560 vph (LOS F) in the no-build scenario to 7940 vph (LOS F).	Add a lane starting at the Harvey Drive on-ramp and drop it after the Central Avenue off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to major construction of four realignments, six bridge reconstruction, and several retaining and sound walls.
SR 134 westbound between the Glendale Avenue on-ramp and the Brand Boulevard/Central Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7570 vph (LOS D) in the no-build scenario to 8050 vph (LOS F).		
I-210 eastbound between the Polk Street on-ramp and the Hubbard Street off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6410 vph (LOS F) in the no-build scenario to 6770 vph (LOS F).	Add a lane between the Polk Street on-ramp and the Paxton Street off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to major construction of seven realignments, three widenings, and two reconstructions, as well as several tie-back and retaining walls.
I-210 eastbound between the Hubbard Street off-ramp and the Hubbard Street on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6040 vph (LOS E) in the no-build scenario to 6400 vph (LOS F).		
I-210 eastbound between the Hubbard Street on-ramp and the Maclay Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7430 vph (LOS F) in the no-build scenario to 7780 vph (LOS F).		
I-210 eastbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 7010 vph (LOS F) in the no-build scenario to 7400 vph (LOS F).		
I-210 eastbound between the Maclay Avenue on-ramp and the WB SR118 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8030 vph (LOS F) in the no-build scenario to 8410 vph (LOS F).		

TABLE 7-17

Summary of 2035 Dual-Bore (without Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 eastbound between the Pennsylvania Avenue off-ramp and the Pennsylvania Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8330 vph (LOS F) in the no-build scenario to 8790 vph (LOS F).		
I-210 eastbound between the Pennsylvania Avenue on-ramp and the La Crescenta Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 9450 vph (LOS F) in the no-build scenario to 9940 vph (LOS F).	Add a lane between the Pennsylvania Avenue off-ramp and the Ocean View Boulevard off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of two tie-back walls at the Ramsdell and Rosemont overcrossings, and a retaining wall along the span of Mayfield Avenue.
I-210 eastbound between the La Crescenta Avenue on-ramp and the Ocean View Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,570 vph (LOS F) in the no-build scenario to 11,060 vph (LOS F).		
I-210 westbound between the Lake Avenue on-ramp and the Marengo Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,750 vph (LOS F) in the no-build scenario to 11,210 vph (LOS F).	Add an auxiliary lane between the Lake Avenue on-ramp and the Marengo Avenue off-ramp, add one lane to the Lake Avenue on-ramp and the Marengo Avenue off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of three tie-back walls at the El Molino Ave overcrossing, the utility overcrossing, and Los Robles Ave overcrossing.
I-210 westbound between the EB SR118 on-ramp and the Maclay Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7280 vph (LOS F) in the no-build scenario to 7470 vph (LOS F).		
I-210 westbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6280 vph (LOS E) in the no-build scenario to 6460 vph (LOS F).		
I-210 westbound between the Maclay Avenue on-ramp and the Hubbard Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6590 vph (LOS F) in the no-build scenario to 6760 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-210 westbound between the Hubbard Street on-ramp and the Polk Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 5840 vph (LOS E) in the no-build scenario to 6010 vph (LOS F).		
I-5 southbound between the Stadium Way off-ramp and the SR 2 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6490 vph (LOS E) in the no-build scenario to 6700 vph (LOS F).		

TABLE 7-17

Summary of 2035 Dual-Bore (without Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements*SR 710 North Study, Los Angeles County, California*

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
SR 60 eastbound between the I-710 on-ramp and the Atlantic Boulevard off-ramp	In the PM peak hour, the freeway demand is expected to increase from 12,450 vph (LOS F) in the no-build scenario to 12,700 vph (LOS F).	Add a lane between the I-710 off-ramp and the I-710 on-ramp, add one more lane to the Atlantic Boulevard on-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to the complete demolition and reconstruction of the I-710/SR 60 interchange.
I-710 northbound between the NB I-5 off-ramp and the Olympic Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7940 vph (LOS F) in the no-build scenario to 8050 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7620 vph (LOS F) in the no-build scenario to 7780 vph (LOS F).	Advanced Travel Demand Management	Yes, recommended for implementation.
I-710 northbound between the Olympic Boulevard on-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8360 vph (LOS F) in the no-build scenario to 8610 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 8130 vph (LOS F) in the no-build scenario to 8460 vph (LOS F).	Add one more lane to the Olympic Boulevard on-ramp and an aux lane between the Olympic Boulevard on-ramp and the SR 60 off-ramp. Drop the fifth lane after the SR 60 off-ramp	No, this improvement is not recommended for implementation due secondary impacts from widening of a bridge.
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the no-build scenario to 8330 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 5280 vph (LOS E) in the no-build scenario to 6140 vph (LOS E).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location will provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the no-build scenario to 7840 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 4780 vph (LOS C) in the no-build scenario to 5930 vph (LOS E).		

TABLE 7-17
Summary of 2035 Dual-Bore (without Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 northbound between the I-10 off-ramp and the EB I-10 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 2330 vph (LOS C) in the no-build scenario to 4880 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 1490 vph (LOS B) in the no-build scenario to 4320 vph (LOS E).	Add a lane between the I-10 off-ramp and the EB I-10 on-ramp	No, this improvement is not recommended for implementation due to impacts to transit movements and secondary impacts due to major construction of five bridge structures.
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the no-build scenario to 7230 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7850 vph (LOS F) in the no-build scenario to 8590 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location will provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5360 vph (LOS D) in the no-build scenario to 6640 vph (LOS F). In the PM peak hour, the freeway demand is expected to increase from 7370 vph (LOS F) in the no-build scenario to 7970 vph (LOS F).		
I-710 southbound between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	In the PM peak hour, the freeway demand is expected to increase from 5770 vph (LOS E) in the no-build scenario to 6890 vph (LOS F).	Add a deceleration lane for the SR 60 off-ramp and add a lane between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one bridge structure.
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the no-build scenario to 7470 vph (LOS F).	Add a lane starting at the Cesar Chavez Avenue on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of seven bridge structures.
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 vph (LOS E) in the no-build scenario to 7310 vph (LOS F).	Add a lane between the Third Street off-ramp and the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one bridge structure.

TABLE 7-17
Summary of 2035 Dual-Bore (without Toll and No Trucks) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the SR 60 on-ramp and the Whittier Boulevard /Olympic Boulevard off-ramp	<p>In the AM peak hour, the freeway demand is expected to increase from 7890 vph (LOS F) in the no-build scenario to 8250 vph (LOS F).</p> <p>In the PM peak hour, the freeway demand is expected to increase from 10,500 vph (LOS F) in the no-build scenario to 10,810 vph (LOS F).</p>	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 southbound between the Whittier Boulevard /Olympic Boulevard on-ramp and the SB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6310 vph (LOS F) in the no-build scenario to 6560 vph (LOS F).		

Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control)
 vph = vehicles per hour

TABLE 7-18

Summary of 2035 Dual-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements

SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
SR 134 westbound between the SB SR 2 on-ramp and the Glendale Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7560 vph (LOS F) in the No Build Alternative to 7890 vph (LOS F).	Add a lane starting at the Harvey Drive on-ramp drop it after Central Avenue off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to major construction of four realignments, six bridge reconstruction, and several retaining and sound walls.
SR 134 westbound between the Glendale Avenue on-ramp and the Brand Boulevard/Central Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7570 vph (LOS D) in the No Build Alternative to 7920 vph (LOS F).		
I-210 eastbound between the Polk Street on-ramp and the Hubbard Street off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6410 vph (LOS F) in the No Build Alternative to 6760 vph (LOS F).	Add a lane between the Polk Street on-ramp and the Paxton Street off-ramp	No, this improvement is not recommended for implementation due to right-of-way conflicts and secondary impacts due to major construction of seven realignments, three widenings, and two reconstructions, as well as several tie-back and retaining walls.
I-210 eastbound between the Hubbard Street off-ramp and the Hubbard Street on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6040 vph (LOS E) in the No Build Alternative to 6390 vph (LOS F).		
I-210 eastbound between the Hubbard Street on-ramp and the Maclay Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7430 vph (LOS F) in the No Build Alternative to 7770 vph (LOS F).		
I-210 eastbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 7010 vph (LOS F) in the No Build Alternative to 7380 vph (LOS F).		
I-210 eastbound between the Maclay Avenue on-ramp and the WB SR 118 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8030 vph (LOS F) in the No Build Alternative to 8400 vph (LOS F).		
I-210 eastbound between the Pennsylvania Avenue off-ramp and the Pennsylvania Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 8330 vph (LOS F) in the No Build Alternative to 8690 vph (LOS F).	Add a lane between the Pennsylvania Avenue off-ramp and the Ocean View Boulevard off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of two tie-back walls at the Ramsdell and Rosemont overcrossings, and a retaining wall along the span of Mayfield Avenue.
I-210 eastbound between the Pennsylvania Avenue on-ramp and the La Crescenta Avenue on-ramp	In the AM peak hour, the freeway demand is expected to increase from 9450 vph (LOS F) in the No Build Alternative to 9820 vph (LOS F).		
I-210 eastbound between the La Crescenta Avenue on-ramp and the Ocean View Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,570 vph (LOS F) in the No Build Alternative to 10,950 vph (LOS F).		

TABLE 7-18
Summary of 2035 Dual-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-210 westbound between the Lake Avenue on-ramp and the Marengo Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 10,750 vph (LOS F) in the No Build Alternative to 11,140 vph (LOS F).	Add an auxiliary lane between the Lake Avenue on-ramp and the Marengo Avenue off-ramp, add one lane to the Lake Avenue on-ramp and the Marengo Avenue off-ramp	No, this improvement is not recommended for implementation due to secondary impacts due to major construction of three tie-back walls at the El Molino Ave overcrossing, the utility overcrossing, and Los Robles Ave overcrossing.
I-210 westbound between the EB SR118 on-ramp and the Maclay Avenue off-ramp	In the PM peak hour, the freeway demand is expected to increase from 7280 vph (LOS F) in the No Build Alternative to 7470 vph (LOS F).		
I-210 westbound between the Maclay Avenue off-ramp and the Maclay Avenue on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6280 vph (LOS E) in the No Build Alternative to 6470 vph (LOS F).		
I-210 westbound between the Maclay Avenue on-ramp and the Hubbard Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6590 vph (LOS F) in the No Build Alternative to 6770 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-210 westbound between the Hubbard Street on-ramp and the Polk Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 5840 vph (LOS E) in the No Build Alternative to 6010 vph (LOS F).		
I-5 northbound between the SR 2 NB off-ramp and the SR 2 SB off-ramp	In the PM peak hour, the freeway demand is expected to increase from 8350 vph (LOS F) in the No Build Alternative to 8520 vph (LOS F).		
I-710 northbound between the Olympic Boulevard on-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 8360 vph (LOS F) in the No Build Alternative to 8570 vph (LOS F).		
I-710 northbound between the Cesar Chavez Avenue on-ramp and the Ramona Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7410 vph (LOS F) in the No Build Alternative to 8240 vph (LOS F).	Add a lane between the Cesar Chavez Avenue on-ramp and the I-10 off-ramp	No, this improvement is not recommended for implementation because due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 northbound between the Ramona Boulevard off-ramp and the I-10 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 6830 vph (LOS F) in the No Build Alternative to 7770 vph (LOS F).		

TABLE 7-18
Summary of 2035 Dual-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 northbound between the I-10 off-ramp and the EB I-10 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 2330 vph (LOS C) in the No Build Alternative to 4810 vph (LOS F).	Add a lane between the I-10 off-ramp and the EB I-10 on-ramp	No, this improvement is not recommended for implementation due to impacts to transit movements and secondary impacts due to major construction of five bridge structures.
I-710 southbound between the EB I-10/Ramona Boulevard on-ramp and the Cesar Chavez Avenue off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5710 vph (LOS E) in the No Build Alternative to 7080 vph (LOS F).	Add a lane between the Ramona Boulevard on-ramp to the SR 60 off-ramp	No, this improvement is not recommended for implementation due to the relatively small size of improvement limits compared to the entire I-710 freeway network. An improvement in this location would provide nominal relief to a small area compared to the overall congestion in the corridor.
I-710 southbound between the Cesar Chavez Avenue off-ramp and the SR 60 off-ramp	In the AM peak hour, the freeway demand is expected to increase from 5360 vph (LOS D) in the No Build Alternative to 6500 vph (LOS F).		
I-710 southbound between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	In the PM peak hour, the freeway demand is expected to increase from 5770 vph (LOS E) in the No Build Alternative to 6840 vph (LOS F).	Add a deceleration lane for the SR 60 off-ramp and add a lane between the SR 60 off-ramp and the Cesar Chavez Avenue on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of one bridge structure.
I-710 southbound between the Cesar Chavez Avenue on-ramp and the Third Street on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6460 vph (LOS F) in the No Build Alternative to 7410 vph (LOS F).	Add a lane starting at the Cesar Chavez Avenue on-ramp and drop it before the SR 60 on-ramp	No, this improvement is not recommended for implementation due to secondary impacts from major construction of seven bridge structures.
I-710 southbound between the Third Street on-ramp and the Third Street off-ramp	In the PM peak hour, the freeway demand is expected to increase from 6570 vph (LOS F) in the No Build Alternative to 7420 vph (LOS F).		
I-710 southbound between the Third Street off-ramp and the SR 60 on-ramp	In the PM peak hour, the freeway demand is expected to increase from 6390 vph (LOS E) in the No Build Alternative to 7240 vph (LOS F).	Add a lane between the Third Street off-ramp and the SR 60 on-ramp	No, this improvement is not recommended for implementation due secondary impacts from major construction of one bridge structure.

TABLE 7-18
Summary of 2035 Dual-Bore (with Toll) Variation of the Freeway Tunnel Alternative Freeway Segment Adverse Effects and Potential Improvements
SR 710 North Study, Los Angeles County, California

Segment Description	Adverse Effect	Potential Improvement	Is the improvement recommended for implementation? If not recommended for implementation, why not?
I-710 southbound between the SR 60 on-ramp and the Whittier Boulevard /Olympic Boulevard off-ramp	In the AM peak hour, the freeway demand is expected to increase from 7890 vph (LOS F) in the No Build Alternative to 8160 vph (LOS F).	Active Traffic and Demand Management	Yes, recommended for implementation.
I-710 southbound between the Whittier Boulevard /Olympic Boulevard on-ramp and the SB I-5 on-ramp	In the AM peak hour, the freeway demand is expected to increase from 6310 vph (LOS F) in the No Build Alternative to 6520 vph (LOS F).		
Active Transportation and Demand Management (ATDM): Include ATDM measures as appropriate. (Examples include advanced metering, changeable message signs, and speed control) vph = vehicles per hour			

TABLE 7-19
Summary of Intersection and Freeway Segment Adverse Effects
SR 710 North Study, Los Angeles County, California

Scenario	Intersections ¹		Freeway Segments ²	
	Number of Adverse Effects	% of Total	Number of Adverse Effects	% of Total
TSM/TDM Alternative	18	11.5%	8	1.3%
BRT Alternative	13	8.3%	13	2.1%
LRT Alternative	13	8.3%	17	2.8%
Freeway Tunnel Alternative				
<i>Single-Bore Operational Variations</i>				
• With Toll	9	5.8%	18	3.0%
• With Toll and No Trucks	8	5.1%	18	3.0%
• With Toll and Express Bus	6	3.8%	19	3.1%
<i>Single-Bore Operational Variations</i>				
• No Toll	11	7.1%	31	5.1%
• No Toll and No Trucks	9	5.8%	30	5.0%
• With Toll	11	7.1%	28	4.6%

¹ There are 156 intersections in the study area.

² There are 606 freeway segment in the study area.

TABLE 7-20
Summary of Intersection and Freeway Segment Recommended Improvements
SR 710 North Study, Los Angeles County, California

Scenario	Intersections ¹		Freeway Segments ²	
	Number of Adverse Effects	Number of Recommended Improvements	Number of Adverse Effects	Number of Recommended Improvements
TSM/TDM Alternative	18	11	8	1
BRT Alternative	13	7	13	2
LRT Alternative	13	7	17	1
Freeway Tunnel Alternative				
<i>Single-Bore Operational Variations</i>				
• With Toll	9	6	18	2
• With Toll and No Trucks	8	4	18	3
• With Toll and Express Bus	6	3	19	3
<i>Single-Bore Operational Variations</i>				
• No Toll	11	9	31	3
• No Toll and No Trucks	9	7	30	5
• With Toll	11	9	28	2

¹ There are 156 intersections in the study area.

² There are 606 freeway segment in the study area.

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SECTION 8

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